

STATE COLLEGE at FITCHBURG



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State College at Fitchburg

Commonwealth
of Massachusetts

Established 1894

ACCREDITED BY

National Council for Accreditation of Teacher Education
New England Association of Colleges and Secondary Schools

MEMBER OF

The Eastern States Association of Professional Schools for Teachers
New England Association of Colleges and Secondary Schools
The American Association of Colleges for Teacher Education
Massachusetts Council on Teacher Education
Association of Teacher Education Institutions
The New England Teacher Preparation Association
National Commission on Accrediting

1965 - 1966 COLLEGE CALENDAR

French Placement Examination (for students starting French in college who have had it before)	Wednesday,	SEPTEMBER 8
Training Schools Open	Wednesday	8
Registration, Freshmen	Monday	13
Registration, Upperclassmen	Tuesday	14
All Classes Begin	Wednesday	15
Columbus Day	Tuesday,	OCTOBER 12
Veterans Day	Thursday,	NOVEMBER 11
Thanksgiving Recess (dormitories closed)	Wednesday noon through Sunday	24—28
Christmas Recess (dormitories closed)	Friday through Sunday, DECEMBER 17	— Jan. 2
Christmas Recess (training schools)	Friday through Friday	24—31
Last Day of Fall Semester Classes	Friday,	JANUARY 14
Mid-Year Finals	Monday through Wednesday	17—26
Dormitories Closed	Thursday through Friday	27—29
Pre-Freshman Interviews	Thursday through Friday	27—28
Spring Semester		
Registration, Spring Semester	Monday	31
Spring Semester Classes Begin	Tuesday,	FEBRUARY 1
Dormitories Closed	Friday through Tuesday	18—22
Winter Vacation (training schools)	Monday through Friday	21—25
Washington's Birthday	Tuesday	22
Spring Recess (college)	Monday through Friday, MARCH 28	— APRIL 1
Good Friday (dormitories closed)	Friday,	APRIL 8
Spring Recess (training schools)	Monday through Friday	18—22
Patriots Day	Tuesday	19
Last Day of Spring Semester Classes	Thursday,	MAY 19
Finals	Friday through Wednesday,	20 — June 1
Memorial Day	Monday	30
Commencement and Baccalaureate	Sunday,	JUNE 5
Training Schools Close	Friday	24

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 M.Ed., Hyannis State Teachers College
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 Ed.D., Columbia University Chairman, Social Studies
 Department
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 C.A.G.S., New York University
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 B.S.Ed., Fitchburg State College

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D. Mus., Boston University	
Lillian Kent	Instructor, Geography
M.A., Clark University	
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Ph.D., University of Connecticut	
	Coordinator of Instructional Media
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M.Ed., University of N. H.	
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Ed.D., Columbia University	
Karl R. Lindquist	Asst. Professor, Science
M.S., Worcester Polytechnic Institute	
Bernice C. Lothrop	Instructor, Home Economics
A.M., Columbia University	
L. Donald Maher	Asst. Professor, English
Ph.D., Columbia University	
Anne May	Asst. Professor, Special Education
C.A.G.S., Boston College	
Muriel G. McAvoy	Asst. Professor, History
M.A., Boston University	
John P. McGrail	Instructor, English
M.A., Boston College	
Philip A. McMurray	Associate Professor
Ed.M., Fitchburg State Teachers College	
	Director of Community College
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M.Ed., Fitchburg State Teachers College	
M. Irene Miranda	Instructor, English
M.A., University of Massachusetts	
John F. Nash	Assoc. Professor, Social Studies
Ed.D., Syracuse University	
Katherine E. O'Connor	Instructor, Nursing
M.S., Boston College	
Alice T. O'Malley	Asst. Professor, Biology
Ph.D., Clark University	
Hope Parker	Instructor, Nursing
M.S., in Ed., Boston University School of Nursing	
Pierre L. Pinet	Asst. Professor, Languages
M.A., University of Pennsylvania	

- Francis P. Powers** Assoc. Professor, Secondary Education
Ed.D., Boston College
- J. Walter Richards** Assoc. Professor, Secondary Education
M.S., University of Massachusetts
- Mary L. Roache** Asst. Professor, Elementary Education
M.S., Fitchburg State Teachers College
- Patricia A. Robinson** Instructor, Nursing
M.S., Boston College
- Helen R. Russell** Professor of Biology and Dean of Studies
Ph.D., Cornell University
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M.A., University of Maryland
- N. Katherine Sehl** Professor and Chairman, Nursing Dept.
Ed.D., Columbia University
- Harry Semerjian** Instructor, Music
M.A., Boston University
- Louis P. Shepherd** Assoc. Professor, English
A.M., Columbia University
- George F. Steffanides** Asst. Professor, Biology
Ed.M., Harvard University
- Elaine M. Stickney** Instructor, Physical Education
M.Ed., State College at Fitchburg
- JoAnne Swanson** Instructor, Nursing
M.S., Boston University
- Lillian Tater** Asst. Professor, English
Ed.M., Harvard University
- Rene J. Thomas** Asst. Professor, Industrial Arts
Ed.M., Fitchburg State College
- Joseph E. Underwood** Asst. Professor, History
Ed.M., Fitchburg State College
- Evelyn Weachter** Asst. Professor - Librarian
M.S. in L.S., Columbia School of Library Service
- Frank E. Wolf** Professor and Chrm., Biology Department
Ed.D., New York University
- Robert A. Zottoli** Asst. Professor, Biology
M.S., University of N. H.

TRAINING SCHOOL — JUNIOR HIGH

- Signe Antila** Asst. Professor - Geography and Guidance
M.S., Fitchburg State Teachers College
- Kathryn A. Baker** Instructor, English and Latin
M.Ed., Fitchburg State Teachers College
- Louis J. Celona** Asst. Professor, Music
A.M., Middlebury College
- Richard F. Condon** Instructor, Mathematics
M.Ed., Fitchburg State College
- Joseph C. Farias** Instructor, Industrial Arts
M.Ed., Fitchburg State College

Douglass C. Hebb M.A., University of California	Instructor, Social Studies
Everett N. Israel B.S., Oswego State University	Instructor, Industrial Arts
Frances Lamey M.Ed., University of Colorado	Instructor, Science
Louis O. Lorenzen M.S.Ed., State College of Bridgewater	Instructor, Art
Frances Marshall B.S., Simmons College	Instructor, Home Arts
Janet W. Mixer M.Ed., Bridgewater State College	Instructor, Physical Education and Science
Anna F. Philbin M.Ed., Fitchburg State College	Asst. Professor, Acting Principal
Betty Ann Stanton M.A., University of Connecticut	Asst. Professor - English, French
William Webber M.S.T., University of Arizona	Instructor, Mathematics

DILLON SCHOOL

M. Elizabeth O'Connor M.Ed., Fitchburg State Teachers College	Asst. Professor, Principal Grade 1
Bettina M. Asselta M.Ed., Fitchburg State Teachers College	Instructor, Grade 2
Patricia Barbaresi M.Ed., University of Connecticut	Instructor, Grade 2
Donald F. Franciosi M.Ed., Westfield State College	Instructor, Grade 6
Barbara A. Johnson M.Ed., State College at Bridgewater	Instructor, Grade 4
Doris V. Lystila M.Ed., Fitchburg State College	Instructor, Grade 3

EDGERLY SCHOOL

Helen L. Carney M.Ed., Fitchburg State Teachers College	Instructor, Grade 2
Marion B. Cushman C.A.G.S., Columbia University	Asst. Professor and Acting Principal, Grade 6
Katherine E. Flynn M.Ed., Fitchburg State College	Instructor, Grade 2
Ann E. Green Ed.M., Fitchburg State College	Instructor, Grade 4
John Kraemer M.Ed., Northeastern University	Instructor, Grade 6
Elizabeth A. Maney M.Ed., Fitchburg State College	Instructor, Grade 1
Robert S. McDermott M.S.Ed., Fitchburg State College	Instructor, Grade 4

Margaret M. McDowell M.Ed., Fitchburg State Teachers College	Instructor, Grade 3
Ann Marie Norton M.Ed., Worcester State College	Instructor, Grade 5
Irene M. Passios M.Ed., Fitchburg State Teachers College	Instructor, Grade 3
Helene S. Riley M.Ed., Fitchburg State Teachers College	Instructor, Grade 1

MEDICAL OFFICERS

Quintino Rollo, M.D., Surgical	College Physician
Donald Paliwonsky, M.D., Medical	College Physician
Margaret M. Peterson, R.N.	Nurse

GENERAL PERSONNEL SUPERVISORS

Paul Dupont	Chief Engineer
Albina Davis	Supervising Housekeeper
Claire G. Lavoie	Principal Bookkeeper
George Gallagher	Head Janitor
Ellen Matson, B.S.	Dietitian



THE STATE COLLEGE AT FITCHBURG

The State College at Fitchburg was originally established as a normal school under the provisions of Chapter 457, Acts of 1894 of the General Laws, and now offers the degree of Bachelor of Arts, Bachelor of Science in Education, and Master of Education.

On the eastern fringe of the city, Massachusetts State College at Fitchburg commands panoramic views of Mt. Wachusett to the south and Pearl Hill to the north.

Of the eleven buildings on campus, the newest (1963) houses the handsomest auditorium in Worcester County. Three dormitories provide attractive living accommodations for men and women. An eleven-story women's dormitory, to be the highest building in Fitchburg, is scheduled for completion by mid-1966. There are also three laboratory schools for children in grades one through nine. The Fitchburg State College Junior High School is the only training school of its type in the commonwealth.

Instituted in 1894, Fitchburg State, long considered primarily a teachers college, now grants A. B. degrees in English, History, and Biology. With an enrollment of 1,139 (exclusive of the evening undergraduate and graduate programs) and a faculty of 106, Fitchburg State offers a variety of courses of study in which a student may specialize. These include the Industrial Arts School, one of the oldest in the nation and New England's chief trainer of teachers in that field, as well as Bachelor of Science Degrees in Special Education, Nursing, and Medical Technology.

BUILDINGS*

ADMINISTRATION AND LIBRARY (11): Offices of administration, Library, Main Auditorium, science and engineering classrooms and laboratories.

THOMPSON HALL (3): College classrooms, Alumni Office, Commuting Students' Lounge.

EDGERLY TRAINING SCHOOL (4): Grades one through six.

JUNIOR HIGH TRAINING SCHOOL (5): Grades seven through nine, Herlihy Auditorium.

THE DILLON TRAINING SCHOOL: (About a quarter-mile from the campus.) A city-owned but College-directed training school for grades one through six.

INDUSTRIAL ARTS BUILDING (7)

PARKINSON GYMNASIUM (8)

MILLER HALL (2): Dormitory for sixty-five women, office of the college nurse.

PALMER HALL (1): Dormitory for seventy-five women, College Cafeteria (open to all students, resident and commuting).

HERLIHY DORMITORY (10) Dormitory for 150 men, Dining Hall (for all resident students).

THE LIBRARY (11): In October, 1963 the Library moved into its quarters on the two floors of the Administration Building. It contains about 32,000 volumes, subscribes to nearly 500 periodicals, and has a record collection of about 1000 musical and non-musical records.

The Library includes a basic reference collection of the best children's books of all times, and special emphasis is placed on books for students in the fields of nursing, guidance, and retarded children. An effort is made to supply needed materials in every area by weekly additions to the Library.

*Parenthetical numbers refer to aerial view of campus on pp. 28-29

STUDENT ORGANIZATIONS AND ACTIVITIES

Students at Fitchburg are fortunate to be in a progressive community and area rich in cultural, social, and religious activities; within easy travel of such important cities as Worcester, Boston, and New York; and in a vacation land famed for its year-round beauty and sports.

Fitchburg State College offers enriching experiences through its student organizations:

ALPHA PHI OMEGA	LOGOS HONOR SOCIETY (male)
BIOLOGY CLUB	MEN'S ATHLETIC ASSOCIATION
CHEERLEADERS	MEN'S DORMITORY BOARD
CLASS, FRESHMAN	MEN'S INTRAMURAL BOARD
CLASS, SOPHOMORE	MUSIC IN THE AIR DISC CLUB
CLASS, JUNIOR	NEWMAN CLUB
CLASS, SENIOR	SAXIFRAGE
COMMUTING BOARD	SKI CLUB
DRAMATICS CLUB	SPECIAL EDUCATION CLUB
EPSILON PI TAU (Industrial Arts honor society)	S.T.E.A.M. (Student Teachers Education Association of Mass.)
FORUM CLUB	STUDENT CHRISTIAN ASSOCIATION
GLEE CLUB	STUDENT GOVERNMENT
HOST and HOSTESS CLUB	WOMEN'S ATHLETIC ASSOCIATION
INDUSTRIAL ARTS CLUB	WOMEN'S DORMITORY BOARD
JUDAIC CLUB	
KAMPUS VUE	

Local cultural activities also include the Fitchburg Regional Community Concert Association, offering special student memberships, while the Student Government Association, through its Cultural Events Committee, provides outstanding figures in the arts and sciences. Moreover, on the Main Street of Fitchburg is The Ship's Mast, a private coffee house for students and faculty, which offers whist, bridge, and chess; and on weekends folk singers lectures, and poetry readings. Although nonsectarian and lay, it is sponsored and partially financed by the Montachusett Council of Churches.

Athletically, for male students there is interscholastic competition in soccer, basketball, track, and tennis with fellow members of the New England Teachers College Athletic Conference and other colleges, as well as in golf, while the men's intramural athletic program includes competition in soccer, touch-football, basketball, and softball. The Women's Athletic Association provides major interscholastic and intramural sports in field hockey, volleyball, basketball, and softball; other sports offered are archery, tennis, badminton, and bowling.

Admissions Procedure

A. Application for admission should be obtained from either the Admissions Office, Fitchburg State College, or the local Guidance Office.

B. Application should be submitted as early as possible during the applicant's senior year of high school. It is desirable to have it accompanied by transcript and school recommendation based upon school grades through the first marking period of the senior year.

C. College Board Scores (The SAT and three achievements) must be forwarded to Fitchburg (Code 3518). The Scholastic Aptitude Test should be taken as a junior when possible. All scores should be sent to Fitchburg State College at the earliest possible date.

D. When the transcript, recommendation, and College Board Scores have been reviewed, the applicant will be notified of any further requirements.

Registration Fee—\$20.00 payable within two weeks of notification of acceptance. This fee will be deducted from tuition of students who attend Fitchburg State College. It is not refundable.

Tuition—Residents of Massachusetts—\$200 annually, payable \$100 at the beginning of each semester. Non-residents—\$600 annually, payable \$300 at the beginning of each semester.

Room and Board—in College Dormitories—\$480 annually, payable:

\$25 upon notification of acceptance, not refundable

\$95 opening day of college in September

\$120 second week in November

\$120 February 1

\$120 April 1

Student Government Fee—\$30.00 payable at registration. This is not refundable.

All fees are payable when due without presentation of bills. Checks for tuition and dormitory fees should be made out to 'State College at Fitchburg.' Check for Student Government Fee should be made out to "Student Government Association (or S.G.A.) of State College of Fitchburg."

Other Expenses—Textbooks and Supplies—approximately \$100 a year.

Personal and social expenses cannot be estimated, as they will vary with the individual.

(NOTE CONCERNING STUDENT PARKING: When conditions warrant, parking space for student-owned cars may be available on campus, but it is not the obligation of the school to furnish such. The College administration disapproves of cars on campus which are not needed for work or for teacher-training travel.)

STUDENT ASSISTANCE

A limited number of scholarships are available to students in certain curricula after they have successfully completed one or more semesters of college. National Defense Loans are also available. Student employment offers another means of financial assistance.

All applications for financial assistance must be made to the Dean of Men and Dean of Women after the student is enrolled in the college.

REQUIREMENTS FOR GRADUATION

1. Successful completion of all the required courses and of the total semester hour requirements of the program.
2. A 2 or better cumulative average for the total program.
3. A 2 or better average in the major field.
4. A satisfactory record of attendance at assemblies and required class activities.
5. The successful completion of a standard first aid course (except for nursing.).
6. The completion of a minimum of 30 semester hours at the college.
7. All students must take either the National Teachers Examination or Graduate Record Examination before graduation.
8. Students graduating in June must file an application for graduation with the Dean of Studies not later than February first of the year of graduation. Students graduating in August must file their application by June first.

REQUIREMENTS FOR STUDENT TEACHING

1. Satisfactory completion of the psychology sequence required in the specific curriculum.
2. Satisfactory completion of the required professional sequence of courses of specific curriculum.
3. Achievement of a satisfactory level of speech in terms of pronunciation and grammar.
4. Indication of the necessary level of readiness and maturity for teaching as adjudged by faculty of the department.
5. Adequate preparation in terms of content:
 - A. Completion of a minimum of 30 S.H. with a 2 or better average in the major field; or of 30 S.H. in the subject matter field and related fields for secondary majors.
 - B. Completion of at least 15 S.H. with a 2 or better average in the area of specialization for elementary majors.
 - C. Completion of 40 S.H. of shop work with an average of 2 or better in the industrial arts curriculum.

STUDENT LOAD

A minimum of 12 hours is considered a full load.

The normal college program ranges from 15 to 18 S.H.

Later registration, employment or absence due to extensive illness may necessitate program adjustments.

A student with a 3 average may take one extra course providing he has the written approval of his department chairman and the approval of the Dean of Studies. Credit will not be given for any overload taken on or off campus which has not been approved.

CLASSIFICATION OF STUDENTS

A student is considered a freshman from the time he is admitted to the college until he has accumulated 30 semester hours of credit. He is ranked as a sophomore with 30 to 60 hours of credit, a junior with 60 to 90, and he becomes a senior with 90 or more credit hours.

GRADES AND GRADING SYSTEM

Grades are recorded as: 4, excellent; 3, good; 2, average; 1, poor; 0, failing; W, withdrew while passing; WF, withdrew while failing.

W carries no grade value. WF is treated as a 0 in computing quality point average.

A student who has had extensive absence or who misses the final examination due to illness may receive an incomplete for the course. The incomplete must be removed not later than 8 weeks after the start of a new semester or it becomes a failing grade.

Students must have a 1.5 average at the end of their freshman year, 1.75 at the end of their sophomore year, 2 in the junior and senior years. No student can graduate who does not have a 2 cumulative average for the four years.

A student must repeat or replace all failed courses. Except in rare instances where the student can meet the requirements for taking an overload, this must be done in summer school.

A student who has had extensive absence or who misses the final also has to go to summer school to make up his deficiencies.

TRANSCRIPTS

Students are furnished with one free transcript upon graduation. A charge of \$1.00 is made for all other transcripts. No transcripts are given unless a student has met all financial obligations to the college.

WITHDRAWAL FROM COLLEGE

A student must report to the Dean of Men or Dean of Women's office and obtain a withdrawal form. After he has met his obligations to the college he will return the form (properly signed by all persons through whom he must check out) to the Dean from whom he received it. A student who drops out of college without doing this will receive a WF for all his courses and will not be eligible for readmission. Furthermore, since he has no official date for leaving college he forfeits tuition refunds.

WITHDRAWAL FROM CLASS

A student who wishes to drop a course must obtain the permission of the Dean of Studies. Any student who fails to do this will automatically receive a WF for the course. However, a student who is in good standing in a course who finds it necessary to discontinue the course before midsemester warnings have been issued will receive a W for the course if he makes the proper arrangements. A student who is failing a course will receive a WF.

Normally a student who drops a course after midsemester warnings will receive a WF. However, a student with a 2 or better average who must lighten his load or drop out of college due to extensive illness or serious accident will receive a W regardless of time of withdrawal.

Other Requirements and Regulations

Other requirements and regulations of this college will be found in the student handbooks. Changes which may be made during the year will be just as binding on the student body as the rules published in the catalog and handbooks, providing that they have been announced through the college newspapers, the administration bulletin board, all-college assemblies or a combination of these.

DEGREE PROGRAMS

The State College at Fitchburg is empowered to grant four degrees: Bachelor of Science in Education, Bachelor of Science in Nursing, Bachelor of Arts, and Bachelor of Science in Medical Technology.

Students preparing to be teachers are candidates for the Bachelor of Science in Education. They may major in elementary education, industrial arts, education of the mentally retarded, or secondary education. Secondary education majors also have a subject matter major selected from one of the following fields: Biology, Chemistry, English, Geography, History, Mathematics, or Physics.

Candidates for the Bachelor of Arts degree may major in Biology, English, or History.

Students in all curricula complete a common core of 57 credits in general education distributed as follows: English 12 credits, Speech 2 credits, Science & Math. 12 credits, Social Science 15 credits, Fine Arts 6 credits, Freshman Orientation to Learning 2 credits, Behavioral Science 3 credits, Philosophy 3 credits.

The balance of the 68 to 76 credits is distributed among major enrichment courses and professional courses.

CURRICULUM OUTLINES

EXPLANATION OF COURSE NUMBERS

- 01-09 Non-credit courses.
- 10-19 First courses in given area of general education series.
- 20-29 Second courses in given area of general education series.
- 30-69 Elective courses.
- 70-89 Professional courses.
- 90-99 Independent Study and Honor courses.

TEACHER TRAINING CURRICULA

Students preparing to teach follow a curriculum which leads to a B.S. in Ed. degree. Four basic areas of concentration are offered: **Elementary Education, Special Education** (mentally retarded), **Industrial Arts and Secondary Education**. Students specializing in secondary education may select one of the following majors: **Biology, Chemistry, English, Geography, History, Mathematics, Physics.**

Students in all these curricula have a semester of student teaching. This occurs in the last semester of the junior year or first semester of the senior year in the industrial arts curriculum. In all other curricula it occurs in the first or second semester of the senior year. Because classes are divided in half for this activity the sequence of semesters of the junior and senior year varies to provide optimum pre-training preparation.

For this reason the four semesters are listed as individual semesters without specific placement in all of the programs.

ELEMENTARY EDUCATION

Freshman Year			Credits
Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Math.	10 A & B	College Mathematics I & II	6
Bio.	10 A & B	Biology I & II	6
Art	10	History of Art Forms I	3
Mus.	10 A	Art of Music IA	2
Sp.	10	Speech	2
Orient.	10 A & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
			S.H. 33

Sophomore Year			
Eng.	20 A & B	American Literature I & II	6
Hist.	21 A & B	U.S. History I & II	6
*Geog.	10	Introduction to Geography	3
Psych.	10	General Psychology	3
Mus.	10 B	Art of Music I B	1
**Sc.	20 A	Physical Science I	3
+Art	80	Art in Elementary Education	2
		3 Electives	9
P.E.	20 A & B	Physical Education III & IV	Cr.
			S.H.33

* Students taking a geography specialization must take geography in the first semester.

** Students taking a science specialization must take Sc.20 B as a second semester elective.

+ Students taking an art specialization will take an art elective in place of Art 80.

Junior and Senior Year			Credits
Ed.	80	General Methods	3
Ed.	81	Reading	3
Psych.	21	Child Psychology	3
		2 Electives	6
			S.H. 15
Phil.	10	Introduction to Philosophy	3
Mus.	80	Music in the Elem. School	2
I.A.	80	Instructional Materials	2
Ed.	82	Mathematics in the Elem. School	2
P.E.	80	Physical Ed. in the Elem. School	1
Sc.	80	Science in the Elem. School	3
		1 Elective	3
			S.H. 16
Ed.	85	Student Teaching	12
Psych.	80	Educational Measurements	3
			S.H. 15
Geog.	20	Geography of U.S. and Canada	3
S.S.	21	Social Institutions	3
		3 Electives	9
			S.H. 15

Each student in the elementary curriculum must select an area of specialization. The following areas are available: Science, History, Geography, Mathematics, Art, Music, Foreign Language, Language Arts and Library Science.

Requirements for each of these specializations will be found under the appropriate subject matter headings.

SECONDARY EDUCATION

All students preparing to teach secondary school follow the same basic curriculum in terms of general education and professional courses. The sequence of these courses varies with the major in order that ample opportunity to build a strong subject matter field can be provided. Details of requirements in terms of specific electives, pre-requisite, and number of electives will be found under the appropriate subject matter headings.

HISTORY, GEOGRAPHY AND ENGLISH MAJORS

Students in all three of these curricula take the courses as listed unless otherwise noted.

Freshman Year			Credits
Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Bio.	10 A & B	Biology I & II	6
Math.	13 A & B	College Mathematics I & II	6
Geog.	10	Introduction to Geography	3
Psych.	10	General Psychology	3
Orient.	10 A & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
			S.H. 32

Sophomore Year			
Eng.	21 A & B	English Literature I & II	6
Ed.	70	Trends in American Education	3
Phil.	10	Introduction to Philosophy	3
Sc.	20 A & B	Physical Science I & II	6
Sp.	10	Speech	2
Eng.	22 A & B	World Literature I & II	
		(English majors)	6
		2 Electives (English majors and Geography majors)	6
S.S.	22	Economics (Geography and History majors)	3
S.S.	31	Political Science (History majors)	3
Hist.	21 A & B	U.S. History I & II (History majors)	6
		Earth Science (Geography majors)	3
P.E.	20 A & B	Physical Education I & II	Cr.
			S.H. 32

Junior and Senior Years			
Psych.	20	Adolescent Psychology	3
Hist.	20	U.S. History & Constitution	
		3 Electives (Physics & Chemistry majors)	3
Hist.	21 A	U.S. History I (Geography majors)	3
Eng.	20 A	American Literature I	
		(History & Geography majors)	3
		2 Electives (Geography majors)	6
		3 Electives (English & History majors)	9
			S.H. 15

Ed.	80	General Methods	3
Art	10	Survey of Art Forms I	3
Art	10	3 Electives (English & History)	9
Hist.	21 B	U. S. History II (Geography majors)	3
		2 Electives (Geography majors)	6
Ed.	86	Student Teaching	9
Psych.	80	Educational Measurements	3
Ed.	83	Specific Methods	3
		S.H.	15
Mus.	11	Art of Music I	3
S.S.	21	Social Institutions	3
		3 Electives	9
		S.H.	15

MATHEMATICS, CHEMISTRY AND PHYSICS MAJORS

Students in all three of these curricula take the courses as listed unless otherwise noted.

Freshman Year

Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Bio.	10 A & B	Biology I & II	6
Chem.	11 A & B	General Chemistry I & II	6
Math.	11	College Algebra	3
Math.	12	Trigonometry	3
Orient.	10 A. & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
		S.H.	32

Sophomore Year

Eng.	20 A & B	American Literature I & II	6
Ed.	70	Trends in American Education	3
Psych.	10	General Psychology	3
Sp.	10	Speech	2
Phys.	30 A & B	General Physics I & II	6
Math.	30	Analytic Geometry	3
Math.	31	Calculus	3
P.E.	20 A & B	Physical Education I & II	Cr.
Phil.	10	Introduction to Philosophy	
		(Mathematics & Physics majors)	3
Chem.	30 A	Organic Chemistry I	
		(Mathematics & Chemistry majors)	3
Chem.	33 A	Analytic Chemistry I	
		(Chemistry majors)	3
Geog.	10	Introduction to Geography	
		(Physics majors)	3
		S.H.	32

Junior and Senior Years

Psych.	20	Adolescent Psychology	3
Hist.	20	U.S. History & Constitution	3
		3 Electives (Physics & Chemistry majors)	9
Geog.	10	Introduction to Geography (Mathematics majors)	3
		2 Electives (Mathematics majors)	6
Ed.	80		S.H. 15
Art	10	General Methods	3
		Survey of Art Forms I	3
		3 Electives	9
Ed.	86		S.H. 15
Ed.	88	Student Teaching	9
Psych.	80	Specific Methods	3
		Educational Measurements	3
Mus.	11		S.H. 15
		Art of Music I	3
S.S.	21	Social Institutions	3
		3 Electives	9
			S.H. 15

BIOLOGY MAJOR**Freshman Year**

Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Chem.	11 A & B	General Chemistry I & II	6
Math.	11	Algebra	3
Math.	12	Trigonometry	3
Bio.	12 A & B	Botany I & II	7
Orient.	10 A. & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
			S.H. 33

Sophomore Year

Eng.	20 A & B	American Literature I & II	6
Ed.	70	Trends in American Education	3
Psych.	10	General Psychology	3
Chem.	30 A	Organic Chemistry I	3
Chem.	32	Biochemistry	4
Bio.	30	Invertebrate Zoology	4
Bio.	31	Vertebrate Zoology	3
Bio.	32	Biological Lab. Techniques	3
		1 Elective	3
P.E.	20 A & B	Physical Education III & IV	Cr.
			S.H. 32

Junior and Senior Years

Psych.	20	Adolescent Psychology	3
Art	10	Survey of Art Forms I	3
Phys.	30 A	Speech	2
Sp.	10	General Physics I	3
		2 Electives	6
		S.H.	17
Ed.	80	General Methods	3
Phys.	30 B	Physics II	3
		3 Electives	9
		S.H.	15
Ed.	86	Student Teaching	9
Psych.	80	Educational Measurements	3
Sc.	88	Science Methods	3
		S.H.	15
Geog.	10	Introduction to Geography	3
Phil.	10	Introduction to Philosophy	3
Hist.	20	U.S. History & Constitution	3
Mus.	11	Art of Music I	3
S.S.	21	Social Institutions	3
Bio.	90	Independent Research	2-3
		S.H.	17-18

INDUSTRIAL ARTS**Freshman Year**

Eng.	10 A & B	English Composition I & II	6
Math.	13 A & B	College Mathematics I & II	6
Hist.	10 A	History of Civilization I	3
Art	17	History of Art Forms	3
Orient.	10 A. & B	Freshman Orientation I & II	2
I.A.	11	Bench Woodworking	2
I.A.	16	Technical Drawing I	2
I.A.	12	Orientation to Metals	2
I.A.	13	Introduction to Typography	2
I.A.	14	D.C. Circuit Fundamentals	2
I.A.	15	History of Mechanics	2
I.A.	17	Crafts	2
I.A.	10	General Shop	2
P.E.	10 A & B	Physical Education I & II	Cr.
		S.H.	36

Sophomore Year			Credits
Eng.	20 A & B	American Literature I & II	6
Chem.	20 A & B	General Chemistry I & II	6
Psych.	10	General Psychology	3
I.A.	70	Foundations of Ind. Arts I	2
I.A.	21	Furniture Making	3
I.A.	22	Machine Shop Processes	3
I.A.	26	Technical Drawing II	3
I.A.	23	Graphic Arts Unit Teaching	3
I.A.	24	Alternating Current Fundamentals	3
I.A.	25	Internal Combustion Engines	3
P.E.	20 A & B	Physical Education III & IV	Cr.
			S.H. 35

Junior and Senior Years			
I.A.	80	Principles and Practices in Ind. Arts	4
Phys.	20	General Physics	3
I.A.	30	Structures	3
Psych.	20	Adolescent Psychology	3
Sp.	10	Speech	2
		1 Elective	3
			S.H. 18
I.A.	85	Student Teaching in Industrial Arts	3
I.A.	81	Foundations of Ind. Arts II	2
Mus.	11	Art of Music I	3
			S.H. 13
Phil.	10	Introduction to Philosophy	3
S.S.	21	Social Institutions	3
Hist.	20	U. S. History & Constitution	3
		2 Electives	6
			S.H. 15
Phil.	80	Philosophy of Education	3
S.S.	22	Economics	3
S.S.	10 B	History of Civilization II	3
		3 Electives	9
			S.H. 18

At least 3 of the electives in this program must be shop electives selected to add depth in the area or areas of the student's major interest.

SPECIAL EDUCATION

Freshman Year			Credits
Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Bio.	10 A & B	Biology I & II	6
Math.	13 A	College Mathematics I	3
Art	10	Survey of Art Forms I	3
Psych.	10	General Psychology	3
Psych.	23	Developmental Psychology	3
Sp.	10	Speech	2
Orient.	10 A & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
			S.H. 34
Sophomore Year			
I.A.	88	Industrial Arts	3
H.A.	80	Home Arts	3
Sc.	10 A & B	Physical Science I & II	6
Mus.	10 A & B	Art of Music IA & IB	3
Ed.	75	Arithmetical Concepts	3
Psych.	70	Exceptional Children	4
Geog.	10	Introduction to Geography	3
Sp. Ed.	71	Nature & Needs of the Mentally Retarded	3
			2 Electives
			6
P.E.	20 A & B	Physical Education III & IV	Cr.
			S.H. 34
Junior and Senior Years			
Sp. Ed.	82	Curriculum for the Mentally Retarded	3
Sp.	80	Introduction to Speech Pathology	3
Eng.	39	Children's Literature	3
Eng.	20 A	American Literature I	3
			1 Elective
			3
			S.H. 15
Sp. Ed.	80	Method of Teaching the Mentally Retarded	3
Hist.	20	U.S. History & Constitution	3
Sp. Ed.	83	Reading	3
Mus.	81	Music	2
Art	80	Art	2

Psych. 87	Educational Measurements	3
		16 S.H.
Sp. Ed. 85	Student Teaching	12
		S.H. 12
Sp. Ed. 23	Guidance	3
Eng. 20 B	American Literature II	3
Phil. 10	Introduction to Philosophy	3
S.S. 21	Social Institutions	3
	1 Elective	3
		S.H. 15

NURSING CURRICULUM

Students enrolled in this program earn a B.S. in Nursing degree and are prepared to take the licensing examination of the Board of Registration in Nursing. Upon completion of the examination they have the title of Registered Nurse.

In addition to the classes held on the college campus clinical laboratory experiences and observations are carried on in selected agencies such as hospitals and public health organizations.

Freshmen Year		Credits
Eng. 10 A & B	English Composition I & II	6
Hist. 10 A & B	History of Civilization I & II	6
Chem. 10 A & B	General Chemistry I & II	6
Math. 13 A	College Mathematics I	3
Phys. 10	Physics	3
Psych 21	General Psychology	3
S.S. 21	Social Institutions	3
Orient. 10 A & B	Freshmen Orientation I & II	2
Nurs. 70	Introduction to Nursing	2
P.E. 10 A & B	Physical Education I & II	Cr.
		34 S.H.
		S.H. 34

Sophomore Year		
Eng. 20 A & B	American Literature I & II	6
Psych. 31	Psychology of Interpersonal Relations	3
Psych. 22	Human Growth & Development	3
Nurs. 72	Microbiology	3
Bio. 38	Nutrition	2
Bio. 11 A & B	Anatomy & Physiology I & II	6
Sp. 10	Speech	2
Nurs. 71 A & B	Foundations of Nursing I & II	8
	Elective in Social Studies	3
P.E. 20 A & B	Physical Education III & IV	Cr.
		S.H. 36

Junior Year			Credits
Nurs.	80	Medical-Surgical Nursing	6
Hist.	20	U.S. History & Constitution	3
Nurs.	81	Maternity Nursing	6
Nurs.	82	Nursing of Children	6
Nurs.	84	Public Health Science	3
Phil.	10	Introduction to Philosophy	3
			S.H. 33

Senior Year			
Nurs.	83	Psychiatric Nursing	6
Nurs.	85	Public Health Nursing	6
Mus.	11	Art of Music I	3
Nurs.	86	Advanced Medical-Surgical Nursing	6
Nurs.	87	Disaster Nursing	2
Nurs.	88	Principles of Management	2
Nurs.	89	Nursing Seminar	2
Art	10	History of Art Forms I	3
			S.H. 30

LIBERAL ARTS CURRICULUM

The Liberal Arts Curriculum is designed for the student whose primary interest is in the designated "Liberal Arts and Sciences." Beginning with the core of general education courses required of all students in the college, the candidate for the B.A. specializes in either English or History or Biology and meets a required level of proficiency in a modern foreign language.

English and History majors in this curriculum may take a minor in another subject such as art or music. Or they may freely choose from offerings of other departments without selecting any second area of concentration. Biology majors will need to use their electives for enrichment in related fields.

ENGLISH MAJOR

Freshman Year			Credits
Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Math.	13 A & B	College Mathematics I & II	6
Mus.	11	Art of Music I	3
Art	10	Survey of Art Forms I	3
Orient.	10 A & B	Freshman Orientation I & II	2
		Foreign Language	6
P.E.	10 A & B	Physical Education I & II	Cr.
		S.H.	32

Sophomore Year			Credits
Eng.	21 A & B	English Literature I & II	6
Eng.	22 A & B	World Literature I & II	6
Sp.	10	Speech	2
Bio.	10 A & B	Biology I & II	
		or	
Sc.	20 A & B	Physical Science I & II	6
Hist.	21 A & B	U.S. History I & II	6
		Foreign Language	6
P.E.	20 A & B	Physical Education III & IV	Cr.
			S.H. 32

Junior Year			
Psych.	10	General Psychology	3
Soc.	21	Social Institutions	3
		Electives in Art and/or Music	6
		2 Distributive Electives	6
		4 English Electives	12
			S.H. 30

Senior Year			
Phil.	10	Introduction to Philosophy	3
		2 Distributive Electives	6
		7 English Electives	21
			S.H. 30

HISTORY MAJOR

Freshman Year			
Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Bio.	10 A	Biology I	3
Sc.	20 B	Physical Science II	3
Math.	13 A & B	College Mathematics I & II	6
Geog.	10	Introduction to Geography	3
Psych.	10	General Psychology	3
Orient.	10 A & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
			S.H. 32

Sophomore Year			Credits
Eng.	21 A & B	English Literature I & II	6
Hist.	21 A & B	U.S. History I & II	6
S.S.	22	Economics	3
S.S.	31	Political Science	3
Sp.	10	Speech	2
		Foreign Language	6
		2 Electives	6
P.E.	20 A & B	Physical Education III & IV	Cr.
			S.H. 32

Junior Year			
Eng.	20 A & B	American Literature	6
Phil.	10	Introduction to Philosophy	3
Art	10	Survey of Art Forms I	3
		Foreign Language	6
		4 Electives	12
			S.H. 30

Senior Year			
S.S.	21	Social Institutions	3
Mus.	11	Art of Music I	3
		8 Electives	24
			S.H. 30

BIOLOGY MAJOR

Freshman Year			
Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Chem.	11 A & B	General Chemistry I & II	6
Math.	11	Algebra	3
Math.	12	Trigonometry	3
Bio.	12	Invertebrate Zoology	4
Bio.	13	Vertebrate Zoology	3
Orient.	10 A & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
			S.H. 33

Sophomore Year			Credits
Eng.	20 A & B	American Literature I & II	6
Chem.	30 A	Organic Chemistry I	3
Chem.	32	Biochemistry	4
Bio.	30 A & B	Botany I & II	7
Math.	21	Calculus I	3
Bio.	37	Anatomy & Physiology	4
		Foreign Language	6
P.E.	20 A & B	Physical Education III & IV	Cr.
			S.H. 33

Junior Year			
Mus.	11	Art of Music I	3
Phys.	30 A & B	General Physics I & II	6
Sp.	10	Speech	2
		Earth Science	3
		Conservation or Field Studies	3
		Foreign Language	6
		3 Biology Electives	9
			S.H. 32

Senior Year			
Psych.	10	General Psychology	3
Geog.	10	Introduction to Geography	3
S.S.	21	Social Institutions	3
Art	10	Survey of Art Forms I	3
Phil.	10	Introduction to Philosophy	3
Hist.	20	U.S. History & Constitution	3
		4 Electives in biology and related fields	12
		Independent Research	2-3
			32-33 S.H.

MEDICAL TECHNOLOGY CURRICULUM

Candidates for this program earn a B.S. degree in Medical Technology.

The senior year will be spent at Burbank Hospital, or another accredited School for Medical Technologists, where additional work in biology and chemistry will be given. Upon completion of this specialized training, the candidate will be qualified to take examinations leading to M. T. certification by the Board of Registry of the American Society of Clinical Pathologists.

Freshman Year			Credits
Eng.	10 A & B	English Composition I & II	6
Hist.	10 A & B	History of Civilization I & II	6
Bio.	10 A & B	Biology I & II	6
Math.	11	College Algebra I	3
Math.	12	Trigonometry	3
Chem.	11 A & B	General Chemistry I & II	6
Orient.	10 A & B	Freshman Orientation I & II	2
P.E.	10 A & B	Physical Education I & II	Cr.
			S.H. 32
Sophomore Year			
Eng.	20 A & B	American Literature I & II	6
Chem.	30 A	Organic Chemistry I	3
Chem.	30 B	Organic Chemistry II	
or			
Chem.	33 A	Anatomy & Physiology	6
Bio.	11 A & B	Analytical Chemistry I	3
Bio.	38	Microbiology	3
Chem.	32	Biochemistry	4
			2 Electives
			6
P.E.	20 A & B	Physical Education I & II	Cr.
			S.H. 31
Junior Year			
Mus.	11	Art of Music I	3
Art	10	Survey of Art Forms I	3
Phys.	30 A & B	Physics I & II	6
S.S.	21	Social Institutions	3
Geog.	10	Introduction to Geography	3
Hist.	20	U.S. History & Constitution	3
Psych.	10	General Psychology	3
Phil.	10	Introduction to Philosophy	3
Bio.	35	Genetics	3
Sp.	10	Speech	2
			S.H. 32

		Senior Year	Credits
		51 Weeks	
M.T.	80	Serology—Blood Bank—Hematology	8
M.T.	81	Bacteriology and Parasitology	8
M.T.	82	Histology and Cytology	4
M.T.	83	Biochemistry	8
M.T.	84	Laboratory Analyses	4
			S.H. 32

COURSE DESCRIPTIONS AND DEPARTMENTAL REQUIREMENTS

Note: Arabic numbers at end of course descriptions represent semester hours and clock hours in that order.

Example

Art 10 Survey of Art Forms I 3-3

The 3-3 represents 3 semester hours, 3 clock hours.

ART

Art 10 Survey of Art Forms I 3-3

A study of the significant art forms in Western civilization from 1800 to the present.

Art 30 Survey of Art Forms II 3-3

A study of the significant art forms in Western civilization from the earliest times to 1800

Art 80 Art in Elementary Education 2-4

Understanding of art in elementary education is developed. Observation and discussion of the philosophy and practice of art education and a wide variety of creative experiences acquaint the student with the teaching of art in the elementary grades.

Art 17 History of Art Forms 3-3

Historical examples of art forms will be included as a background to the aims, elements and principles of design. Students will be asked to bring in completed solutions to individual design problems for class criticism. Required of Industrial Arts students.

ART TEACHING SPECIALTY

Students in the Elementary Education Program will be admitted into this program at the discretion of the art faculty.

ART MINOR PROGRAM

Students in the B.A. program will be admitted into this program at the discretion of the art faculty and with the approval of their major professor.

Required courses in the Art Teaching Specialty and Art Minor Programs:

Art 10 (see above)

Art 30

Art 31 Basic Design

2-4

A study of the pictorial elements: line, color, shape and texture. The integration and usage of these basic elements as a preparation for the areas of drawing, painting and sculpture. **Prerequisite: Art 10.**

Art 32 Basic Drawing

2-4

A studio course to acquaint the student with various modes of drawing, emphasis being primarily upon the exploration of line and mass. **Prerequisite: Art 31 or permission of the instructor.**

Art 33 Studio Problems in Painting and Drawing

2-4

An introduction to the fundamental techniques in pictorial composition with emphasis upon the handling of painting media. **Prerequisite: Art 32.**

Art 40 Advanced Studio Problems in Painting and Drawing

3-6

A continuation of Art 30 with a deepening emphasis upon individual problems. (Students in the Art Teaching Specialty Program are advised to take this course after the training period.) **Prerequisite: Art 30.**

Art 81 Seminar in Art Education

2-4

Limited to students in the Art Teaching Specialty Program; designed to acquaint the student with professional practices in art education. It will include laboratory experiences, observations in the classroom and discussions concerning professional literature. **Prerequisite: Art 30.**

ELECTIVES

The electives listed below are open to all students; those specializing in art are expected to select at least one to complete their art specialty.

Art 34 Art of Asia 3-3

A survey of the major art forms of Asian cultures; emphasis is placed on Chinese art, especially its calligraphy and painting.

Art 35 American Art 3-3

Understanding of the growth and character of architecture, sculpture, painting, and the minor arts from colonial days to the present is developed with special emphasis upon contemporary art forms.

Art 36 Renaissance Painting 3-3

A study of painting in Europe from 1250 to 1600. Emphasis is placed upon the development of pictorial structure and technical innovations which set the standards of easel painting up to the first half of the 20th century.

Art 37 Impressionism 3-3

A study of the individual styles and their creators within the Impressionist movement. Impressionism is seen as the bridge between traditional ways of visualizing and the modern period.

BIOLOGY

(Also see Science)

Bio. 10A & 10B Biology I and II 3-4

A general education course designed to provide the non-major with an understanding of living things. Laboratory investigations and field work supplement the lectures.

Bio. 12 Invertebrate Zoology 4-6

Deals with the major phyla of invertebrate animals. A wide variety of animals is used for laboratory study. Lectures are coordinated with laboratory studies, with emphasis on zoological principles and relationships. Required of biology majors.

Bio. 13 Vertebrate Zoology 3-4

The study of representative vertebrates. Emphasis is placed on ecological and economic factors, as well as life-histories. Laboratory investigations supplement the lectures. Required of biology majors.

Bio. 11A & 11B Anatomy and Physiology I & II 3-4

Provides the fundamental concept for understanding the structure and function of the human body. Laboratory investigations supplement the lectures. Required in the nursing and medical technology curricula.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Secondary education and liberal arts students majoring in biology as well as students majoring in medical technology will be programed with required sequences in biology, chemistry and physics. The biology sequence is derived from among the following courses.

Students in other curricula may, under guidance, also elect these courses as well as Bio. 11A & B, Bio. 12 and Bio. 13. Industrial Arts students may elect Bio. 10A & B.

Bio. 30A Botany I - Botany of Non-Flowering Plants 4-6

The emphasis in this course is on representative Thallophytes, their biology and their importance to man. Local Bryophytes and Pteridophytes are also briefly studied. Laboratory work supplements the lectures.

Bio. 30B Botany II - Botany of Flowering Plants 4-6

Lectures and laboratories include ecology, economic importance, morphology and classification of representative species of flowering plants. Local forms are stressed.

Bio. 32 Biological Laboratory Techniques. 3-4

Includes a study of experiments and demonstrations which are useful in illustrating representative areas of general biology. Laboratory investigations are coordinated with classwork. **Prerequisites: Biology 10 A & B or equivalent.**

Bio. 33 Conservation of Natural Resources 3-4

The proper use and management of fish and wildlife, recreation areas, soil, forests, and minerals are studied in the classroom and field. The course includes demonstrations, experience in woodlot management, and field trips to farms that practice conservation techniques.

Bio. 34 Field Natural History 3-4

Field work is the basis of this course with lecture periods used to supplement and interpret data. Ecological factors as terrain, soil, climate and temperature, and vegetation are studied as part of the interrelationship of living things.

Bio. 35 Genetics 3-4

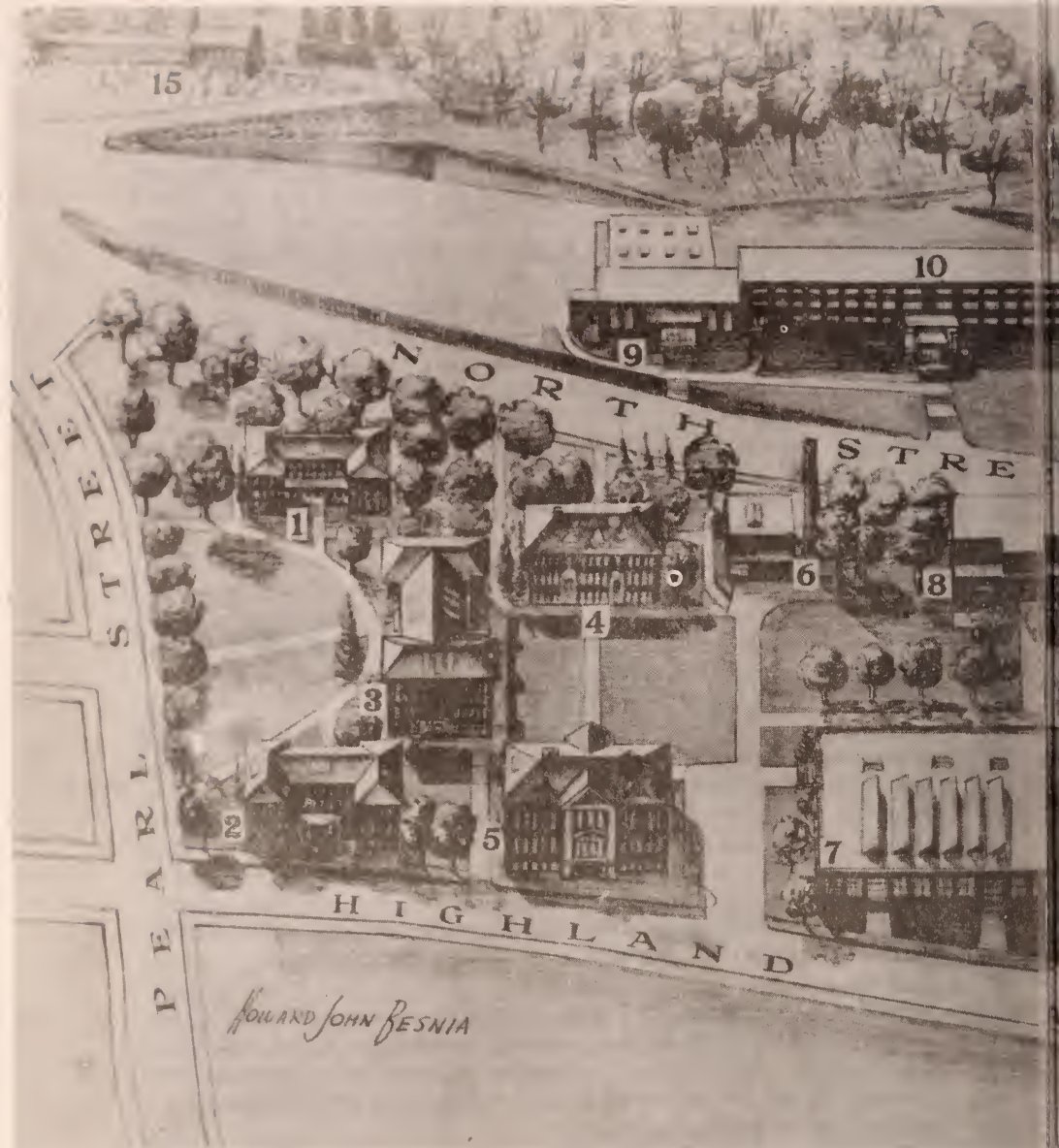
Includes a study of the history of evolutionary thought, the mechanics of heredity, environment and heredity acting on the organism, and the application of knowledge in the field to new and anticipated problems. Laboratory work supplements formal study.

Bio. 36 Plant Physiology 3-4

The function of plant cells, tissues, and other structures; water relations; absorption and translocation; metabolism; mineral nutrition; and plant development and growth are studied. **Prerequisites: Chemistry I and Biology I or equivalent.**

Bio. 37 Anatomy & Physiology 4-6

A one-semester version of Biology 11 A & B. Anatomy & Physiology I and II.



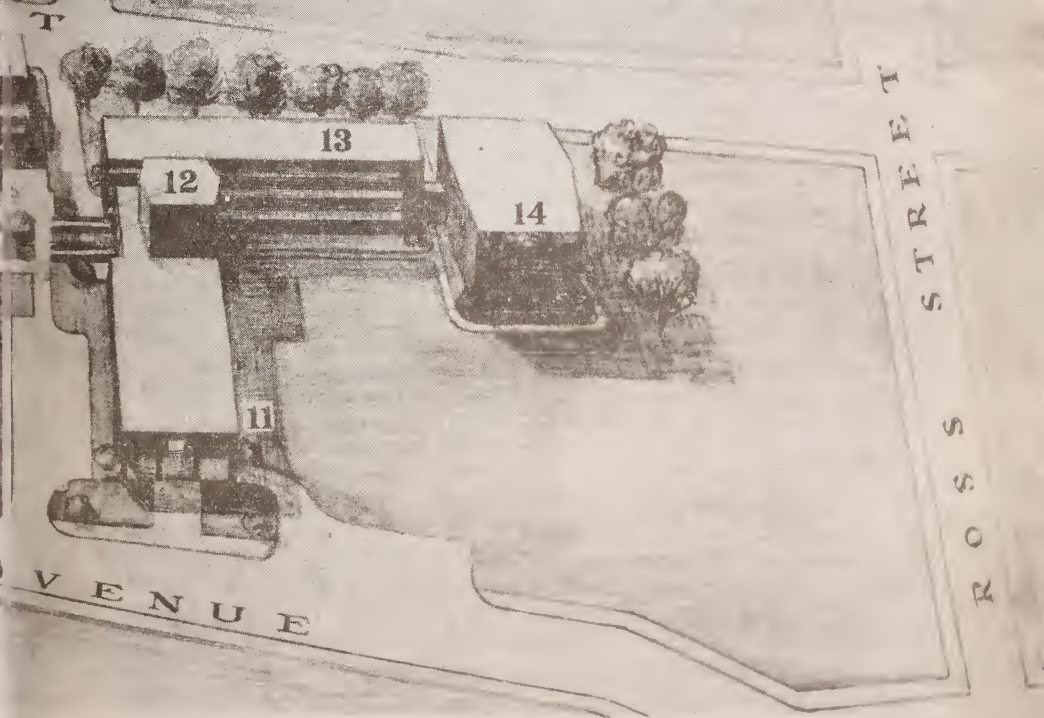
1. Palmer Hall
2. Miller Hall
3. Thompson Hall
4. Edgerly
5. Junior High

6. Heating Plant
7. Industrial Art
8. Gymnasium
9. Herlihy Dining Hall
10. Herlihy Dormitory

FITCHBURG STATE COLLEGE

FITCHBURG, MASSACHUSETTS

Aerial View OF THE *Main Campus*



- 11. Administration & Library
- 12. Lecture Hall
- 13. Science
- 14. Auditorium
- 15. Maintenance

Bio. 38 Microbiology 3-4

A study of the microbial world with special emphasis on the history and biological interrelationships of microorganisms. Molecular biology, viruses, rickettsias, bacteria, morphological and functional characteristics. Laboratory investigations supplement the lectures.

Bio. 39 Comparative Chordate Anatomy 3-4

Includes a comparison of the structures and an evaluation of the body systems of the chordates. Special emphasis is placed on the dog-fish shark and the cat. Laboratory work supplements the lectures.

Prerequisites: Biology 10 A&B or equivalents.

CHEMISTRY**Chem. 20A & 20B General Chemistry I and II 3-4**

In this study of the fundamentals of chemistry, material selected from both the inorganic and organic fields is included. Modern chemical processes and products are emphasized. Required of Industrial Arts students.

Chem. 10A Chemistry I 3-4

In this systematic study of the fundamentals of chemistry, applications in inorganic chemistry are included. Special attention is given to problems in physiological chemistry. Required in the Nursing curriculum.

Chem. 10B Chemistry II 3-4

A systematic study of the chemistry of carbon compounds at the per-professional level, with special attention to problems in physiological chemistry. Required in the Nursing curriculum. **Prerequisite:** Chem. 10A.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Candidates for secondary teaching certificates in Chemistry must select courses from those listed below to complete twenty-four semester hours of credit in Chemistry. The Chemistry faculty in charge of counseling students may prescribe additional courses in the field.

Students of other curricula also may elect, under guidance, the following courses:

Chem. 11 A & B General Chemistry I and II 3-4

This course includes a study of the fundamental laws and theories of chemistry such as atomic structure, the periodic table, electrochemistry, descriptive inorganic chemistry, the gas laws, solutions, descriptive organic chemistry, and chemical binding. Chemical calculations are emphasized.

Chem. 30 A & B Organic Chemistry I and II 3-4

This course is a systematic study of the chemistry of carbon compounds from the functional group approach. Aliphatic and aromatic families are covered. **Prerequisite:** Chem. 11 A & B or the equivalent.

Chem. 32 Biochemistry 4-6

A one-semester introductory course designed to cover the chemistry of carbohydrates, fats and proteins. Special topics on the metabolic processes of living things (supplemented with laboratory work) will also be studied. Required of biology majors in sophomore year. **Prerequisite:** Organic Chemistry.

Chem. 33 A & B Analytical Chemistry I and II 3-5

This is essentially a laboratory course in analytical procedures plus one lecture hour per week. Procedures covered are qualitative analysis; gravimetric analysis; volumetric analyses including acid-base, redox, precipitation and complexometric titrations; and a familiarization with several instrumental procedures in instrumental analysis. **Prerequisite:** Chem. 11 A & B or the equivalent.

Chem. 34 Physical Chemistry 3-4

This course is a study of the underlying principles of chemistry from a physical chemistry standpoint. Topics covered are kinetic theory, theories of the structure of matter, theory of electrolytic solutions, electrochemistry, thermodynamics, and kinetics. **Prerequisite:** Chem. 33 A & B.

Chem. 35 Advanced Inorganic Chemistry 3-3

This course covers more advanced topics in inorganic chemistry than time permits in the introductory course. Topics covered include valency theories, acid-base theories, reactions in non-aqueous solvents, complexation and chelation, and physical measurements in inorganic chemistry. **Prerequisite:** Chem. 34.

Chem. 36 C. B. A. and CHEM STUDY Chemistry 3-4

This course pursues the rationale underlying both the theoretical and laboratory presentation in the two presentations. **Prerequisite:** Chem. 34.

Chem. 37 Radiochemistry 3-5

A laboratory course in the use of radioisotopes in chemistry. One lecture hour is scheduled per week. **Prerequisite:** Chem. 34.

Chem. 90 Independent Study in Chemistry 3-5

A laboratory course in the study of chelate compounds through the use of potentiometric titrations. **Prerequisite:** Permission of the instructor.

EDUCATION

Ed. 80 General Methods

3-5

Required of all education majors. This course is organized as a team teaching approach. It provides the student with operational definitions of generic educational goals and systematic training in the ways of achieving these goals. Observation on appropriate levels supplements classroom activities.

ELEMENTARY EDUCATION

Ed. 81 Reading in the Elementary School

3-3

This course deals with the problems and methods of teaching reading in the primary and elementary grades, presenting suggested procedures for each stage of the pupil's development. Many basic reading series are examined and studied.

Ed. 82 Mathematics in the Elementary School

2-2

Selected topics from the arithmetic, algebra, and geometry of "modern" elementary school mathematics and a survey of various "modern" elementary school mathematics programs, including the School Mathematics Study Group Program, the Madison Project, and the Stanford Project. See also Mus. 80, Sc. 80, P.E. 80, Art 80.

Ed. 85 Student Teaching in the Elementary Schools

12-25

Students are assigned to two grade levels, nine weeks each, for a continuous eighteen-week period. During the semester the student teaches in a modern elementary school under the guidance of experienced teachers.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Each student in elementary curriculum should select an area of specialization. The following areas are available : Science, History, Arts, Music, Geography, Mathematics, French, Language Arts, and Library Science. See departmental write-ups for requirements.

For a language arts specialization the following courses are required:

Ed. 80 Language Arts

Ed. 83 Reading Improvement

Eng. 39 Children's Literature

Sp. 80 Introduction to Speech Pathology

Sp. 81 Practicum in Speech Therapy

Ed. 89 Language Arts in the Elementary School

3-3

This course deals with the four aspects of a total program in language-arts: listening, speaking, writing and creativity. It stresses the building of desirable standards of speaking and writing suitable to the child's level of development.

Ed. 83 Reading Improvement

3-3

This course presents a practical program for the improvement of reading based upon research findings and sound instructional procedures. Each student is assigned an individual child who is in difficulty in the attempt to learn to read.

Ed. 84 Social Studies in the Elementary School 2-2

This course deals with the study of man and his relationships with other men and with his environment. Topics covered include use and interpretation of graphs, charts and cartoons; use of globes and maps; and teaching for world understanding. Required of students specializing in geography and history.

SECONDARY EDUCATION**Ed. 70 Trends in American Education**

An historical study, with emphasis on current practices and trends at both elementary and secondary levels. Western and American concepts and influences, issues, leaders and movements in current educational literature. Required of secondary education majors.

Ed. 86 Student Teaching in the Secondary School 9-25

Students are assigned to a laboratory school for a semester of student teaching in their specialized field. Under trained supervision, responsibility is gradually assumed for planning and executing the educational program, utilizing resources of scholarship and principles of teaching and learning.

Ed. 87 Reading in the Secondary School 3-3

These courses emphasize curriculum-development, material and nature of reading. Emphasis is given to informal method of appraisal through teacher observation and diagnosis. Required of secondary English majors.

Ed. 88 Special Methods in Major Areas 3-3

These courses emphasize curriculum-development, material and any methods that are peculiar to the specific subject matter major. In some instances more specific write-ups will be found under departmental write-ups such as Math. 88, Sc. 88, etc.

Ed. 75 Arithmetical Concepts 3-3

Includes a study of the equipment and techniques useful in illustrating mathematical concepts in elementary education. A logical development of the structure of elementary school mathematics as background material. Required of Special Education majors.

Ed. 76 Instructional Media Techniques 3-3

A basic study of the effective selection, evaluation and use of various types of instructional media and the place of these media in the enrichment of teaching techniques in all classroom areas.

ENGLISH**Eng. 10A English Composition I****3-3**

Practice in expressing ideas with precision, clarity and economy. Oral and written exercises supplement individual themes largely based on standard texts of rhetorical and literary selections. Note: It is assumed that freshmen will have mastered minimum essentials of acceptable grammar, usage, punctuation, and spelling before coming to college.

Eng. 10B English Composition II**3-3**

Essentially a continuation of Eng. 10A, but more advanced. A mastery of basic principles of logical thinking and of the elementary critical vocabulary is expected. Preparation of the research essay.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Students following the liberal arts curriculum with a major in English are required to take a total of 27 S.H. of elective courses to make a total of 45 S.H. of English.

Students preparing to teach English are required to take a minimum of 24 elective hours to make a total of 42 S.H. of English.

Students in other curricula may also select electives from among the following:

Eng. 29A American Literature I**3-3**

A survey of representative American writers from Colonial days through the Civil War. Important political, social and cultural developments, as well as literary aspects are considered. **Required for those not majoring in English. Elective for English majors.**

Eng. 30 World Drama**3-3**

Significant and representative plays from ancient Greece to the modern period are analyzed as examples of dramatic masterpieces that cope with the problems of man.

Eng. 31 Modern Drama**3-3**

The ideals, motives and problems of modern life, as well as dramaturgy, are studied in the works of such playwrights as Ibsen, Chekhov, Shaw, Williams, Ionesco.

Eng. 32 Shakespeare**3-3**

Significant tragedies, comedies, and historical plays are studied in order that the student may attain understanding and appreciation of Shakespeare's genius, artistry, and importance in world drama.

Eng. 33 Elizabethan Literature**3-3**

This course emphasizes the main characteristics of Renaissance and Elizabethan literature.

Eng. 34 Literature of the Romantic Period**3-3**

The Romantic Period in English literature is considered through the works of Wordsworth, Coleridge, Byron, Shelley, and Keats; minor writers such as Lamb and Hazlitt also are studied.

Eng. 35 Literature of the Victorian Period**3-3**

Selected Victorian prose, poetry, and drama are studied for a greater understanding of the aesthetic, spiritual, and social development of this period.

Eng. 20B American Literature II 3-3

A survey of representative American writers since the Civil War. **Required for those not majoring in English. Elective for English majors.**

Eng. 21A English Literature I 3-3

A survey of English writers in the context of literary history from the Old English period through the early Romantic writers of the late eighteenth century. **Required for English and History majors. Elective for other curricula.**

Eng. 21B English Literature II 3-3

A survey of English writers since the Romantic Movement. **Required for English and History majors. Elective for other curricula.**

Eng. 22A World Literature I 3-3

European literary masterpieces from the beginning through the middle of the seventeenth century. A study of the ideas and ideals of man in the Western World. **Required of English majors. Elective in other curricula.**

Eng. 22B World Literature II 3-3

European literary masterpieces from the mid-seventeenth century to the present. A study of the origins of basic ideas of modern man in the Western World. **Required of English majors. Elective in other curricula.**

Eng. 36 Literary Criticism 3-3

A study of landmarks in literary aesthetics and criticism from Aristotle to the present.

Eng. 37 Milton 3-3

The English poems of Milton and some prose, including **Paradise Lost**.

Eng. 38 The Eighteenth Century 3-3

From the development of Neo-classicism to the early stirrings of Romanticism: Dryden to Burns.

Eng. 39 Children's Literature 3-3

A study of basic criteria to evaluate children's literature; to emphasize skills in story-telling; to know source materials; to encourage book clubs, book fairs, school and classroom libraries; to consider related areas; to develop wider reading. **Designed for Elementary and Special Education curricula.**

Eng. 40 Books and Related Materials for Young People 3-3

This course is designed to give knowledge and appreciation of the outstanding literature for young people with guides to its selection and use.

Eng. 41 The Novel before World War I 3-3

Significant novels written before World War I, representing various countries and periods as well as stages in the development of this literary form, are studied both as social documents and works of art.

Eng. 42 The Modern Novel**3-3**

The international novel from the First World War through today is studied both as a literary form and as an attempt by man to understand his psychological, social, and spiritual problems.

Eng. 43 The Short Story**3-3**

Short fiction, including the episode, tale, and novella, and emphasizing the modern short story since Poe, is studied both as an art form and as a medium for the portrayal of personal relationships in various countries and periods.

Eng. 44 Modern Poetry**3-3**

This study of representative modern poetry emphasizes the writings of contemporary American and English poets.

Eng. 45 Historical Development of the English Language**3-3**

The nature and development of the English language, its structure, etymology, morphology, multilingual vocabulary, and position in relation to other languages, is studied for an understanding of the political, social, and cultural influences upon our native tongue.

Eng. 90 Independent Study**3-3**

For English majors excelling in scholarship, upon approval of both department head and advising instructor.

FRENCH

A minimum of six semester hours of French is required for credit toward a degree. All French courses must be taken on a two-semester basis to obtain the full six credit hours. Students in the Liberal Arts program using French for their language requirement must complete French courses equal to the level to French 22. Students in elementary curriculum wishing to specialize in French must reach the minimum proficiency level of Fr. 22 and take Fr. 80.

Fr. 10A French for Beginners-A**3-4**

This course aims to develop through the aural-oral approach correct pronunciation, reading ability, and fundamentals of grammar and syntax. French gradually becomes the working classroom and laboratory language.

Fr. 10B French for Beginners-B**3-4**

This course is a continuation of French 10A.

Fr. 11A French I Intermediate**3-4**

Includes remedial pronunciation, grammar variety, conversation and laboratory practice, and readings stressing life, customs, and culture of France. **Prerequisite:** Two years of high school French or French 10-A and B and or satisfactory score on Placement Test.

Fr. 11B French II Intermediate**3-4**

This course is a continuation of French IIA.

Fr. 22A French Civilization

This course deals with the development of the French nation as revealed in its history, geography and basic institutions through modern literature. **Prerequisites: Placement Test or completion of French 11A and B and/or instructor's permission.**

Fr. 22B French Civilization II 3-3

This course is a continuation of French 22A.

Fr. 33A French Literature I 3-3

A survey of the main currents of French literature from the Middle Ages to the present. **Prerequisite: Placement Test or completion of French 11A and B and/or instructor's permission.**

Fr. 33B French Literature II 3-3

This course is a continuation of French 33A.

**Fr. 80 Methods in the Teaching of French in the
Elementary School** 3-3

Designed to develop phonetic accuracy, aural comprehension and fluency in practical use of the language; techniques and materials for use in elementary school. **Prerequisites: Minimum of twelve semester hours beyond beginners' course and permission of instructor.**

Fr. 90 Advanced French Independent Study 3-3

Designed for independent study within a designated area on an advanced basis. **Prerequisites: Minimum of twelve semester hours, 2.5 grade average (in French) and permission of instructor.**

GEOGRAPHY**Geog. 10 Introduction to Geography** 3-3

This course develops an understanding of and appreciation for the inter-relationships that exist between the physical and cultural elements of man's environment.

Geog. 20 Geography of the United States and Canada 3-3

Organized on the regional basis, the course emphasizes the influence of topography, climate, soils, vegetation, transportation, and natural resources on the occupations and cultural development of each region.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

A major in Geography can be obtained after the Introduction to Geography course has been satisfactorily completed by selecting 9 three-hour courses from the following list of electives.

Students majoring in elementary education with a specialization in geography are required to complete at least 18 semester hours of geography and take Ed. 84 Social Studies in The Elementary School. They are encouraged to also take history electives and thereby earn a social studies specialization.

Students in other curricula may elect any geography electives for enrichment after taking Geog. 10.

Geog. 30 Economic Geography 3-3

This presents the basic geographic factors that are involved in the production, distribution, and consumption of the major commodities of the world.

Geog. 31 Meteorology 3-3

Deals with the laws and principles underlying atmospheric phenomena, weather analysis and forecasting, and the application of weather data to problems of agriculture, forestry, transportation and health.

Geog. 32 Climatology 3-3

Presents a systematic study of the climatic regions of the earth and the interplay of latitude, pressure cells, mountain barriers, water bodies, ocean currents, and winds on the development of each climate type.

Geog. 33 Geography of Latin America 3-3

This course presents the geography of the countries and colonies of Latin America; historical background and political status, physical and climatic regions, agricultural and economic position, and inter-American and international relations.

Geog. 34 Geography of Europe 3-3

This regional analysis is based on the geographic elements that have influenced the evolution of the countries of Western Europe and have produced the national and international problems faced by European countries today.

Geog. 35 Geographic Influences in American History

Oceans and coasts, islands and harbors, mountain barriers and gaps, weather and climate, soil and vegetation, native animals and natural resources are analyzed to show their influence on the exploration, colonization, and expansion of the United States.

Geog. 36 Political Geography**3-3**

Political Geography is the study of dependent and independent political units (colonies, protectorates, trust territories, commonwealths, and countries), boundary disputes, strategic areas, buffer zones, and international organizations.

Geog. 37 Geography of Asia**3-3**

A regional analysis based on the geographic factors that have played a part in the development of the internal and external problems facing the nations of Asia today.

Geog. 38 Geography of Africa and Australia**3-3**

This course presents the economic, political, historical, and cultural development of the countries of Africa, Australia, New Zealand, and the South Pacific Islands in relation to their physical environment.

Geog. 39 Geomorphology**3-3**

The study of land forms (mountains, plateaus, valleys, lakes, canyons, beaches and caves) and their development through the action of physical agents: glaciers, surface water, underground water, wind vulcanism, diastrophism, and waves.

Geog. 40 Geography of the South Pacific**3-3**

Treats Australia, New Zealand, and the island groups within Melanesia, Micronesia and Polynesia.

Geog. 41 Cartography**3-3**

Involves the study of elementary drafting techniques necessary in presenting data on maps, charts, and block diagrams. Problems and methods of research, compilation, scale and the construction of the common types of map projections are included.

Geog. 90 Independent Study in Geography**3-3**

This course provides students of exceptional ability and high academic achievement who are specializing in Geography, the opportunity to investigate and analyze, with faculty guidance, a subject or problem of geographic significance.

HISTORY

(Also see Social Studies)

Hist. 10A & 10B History of Civilization I and II**3-3**

A survey of the development of world civilization emphasizing the special characteristics and contributions of periods and peoples from primitive man until today, with special emphasis on the relationship to the present culture.

Hist. 20 United States History and Constitution**3-3**

A selective, topical survey of the major forces and movements most important in the development of the American heritage, from the Revolutionary War to the present. Special attention is given to the United States Constitution and its role in American history.

Hist. 21A United States History I**3-3**

A survey of the Colonial scene. The background and causes of the Revolutionary War, the Articles of Confederation, the United States Constitution, the formative years, and the Civil War are studied in depth.

Hist. 21B United States History II**3-3**

This course begins with the post Civil War Reconstruction, continues through the nineteenth century to the Progressive Era, World War I, the decade of reaction, the Great Depression, the New Deal, World War II, ending with the Kennedy years.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Candidates for the degree of Bachelor of Arts with a major in history or Bachelor of Science in Education with a major in history are required to complete a minimum of 30 and 27 semester hours respectively in guided elective courses in or pertaining to their major fields. All electives must be approved by the history faculty. Students majoring in elementary education with a specialization in history are required to complete at least 18 semester hours of history and take Ed. 84 **Social Studies in Elementary School**. They are also encouraged to take geography electives to earn a social studies specialization. Students in other curricula may also select electives from among the following courses.

Hist. 30 Russian History to 1917**3-3**

Study begins with the Slavs and the founding of the Kievan State and continues the Mongol, the Muscovite and the Empire periods to the 1917 Bolshevik Revolution. Social, political and other institutions in pre-Soviet Russia are stressed.

Hist. 31 Russian History - 1917 to the Present**3-3**

This course begins with the Bolshevik seizure of power in 1917 and the attempts to put Marxist theory into practice in Russia. The contributions of Communist leaders are considered. The institutional development of education, religion, the family, and the arts is studied.

Hist. 32 British History 55 B.C. - 1603 A.D.**3-3**

The Picts, Celts, Angles, Saxons, Danes and Norman French are studied as components of British stock. Study of pre-Roman is followed by study of the historical events and culture changes of Anglo-Saxon, Norman, Angevin and Tudor periods.

Hist. 33 British History - 1603 to the Present**3-3**

Topics include: Stuarts, Cromwell, Restoration; limited monarchy; colonial period; revolutions in industry, transportation and agriculture; Napoleonic Era; Victorian Age; world empire; World War I; World War II; Britain in the post-war world. The literary and artistic expressions and dominant thought of the several eras.

Hist. 34 History of the Renaissance and Reformation 3-3

The causes and nature of the Renaissance and Reformation and their relationship. Topics include Humanism, Italian Renaissance, growth of opposition to the Papacy, rise of Protestantism, Wycliff, Huss, Luther, Calvin, Zwingli, church reforms, rise of the orders, discovery and exploration.

Hist. 35 The Economic History of the United States 3-3

The economic development of the United States from the colonial period to the present. Particular attention is placed on the agricultural, financial, commercial, industrial-regulatory and labor developments and movements.

Hist. 36 The American Civil War and Reconstruction Period 3-3

This course covers the period from 1850 to 1865, especially the nation and its sections in the 1850's, politics and slavery, Lincoln's rise to power, the political, military, diplomatic aspects of the war, reconstruction.

Hist. 37 The Westward Movement 3-3

This course studies the frontiers which have constituted the American West. The movement as a social process, and the impact of the West on American development.

Hist. 38 Modern Economic History 3-3

Economic development in the Western world from the Industrial Revolution to the present. Topics include industrial, financial, commercial developments in Britain, France, Germany, Russia, Japan, and the United States, and their world interrelationships.

Hist. 39 European History to 1815 3-3

The development of Europe from 1500 to 1815 with special emphasis upon the political, social, and economic progress of the major European nations.

Hist. 40 European History from 1815 to the Present 3-3

Liberalism and nationalism, the Industrial Revolution, unification of Germany and Italy, World War I, the Russian Revolution, the search for security, World War II, and the post-war quest for peace.

Hist. 41 American Diplomatic History 3-3

A survey of the roots of American diplomacy before 1900, with major emphasis on the problems of American diplomacy in the twentieth century.

Hist. 42 History of the Middle Ages 3-3

The political-cultural history of the Mediterranean and European world, from the fall of the Roman Empire to the Renaissance. Topics include Christendom and Islam, feudalism, the rise of commerce, and the dominant thought and cultural contributions of the several periods.

Hist. 43 Current World Affairs 3-3

The course surveys the background, action, and consequences of two World Wars. It also studies the years following with a view toward an understanding of present world problems and international relations through an analysis of contemporary forces and issues.

Hist. 45 American Intellectual History 3-3

The history of ideas in America from the seventeenth century to the present. The course traces the evolution of the major traditions through the writings of significant figures and in relation to significant historical events.

Hist. 46 Early Intellectual History 3-3

The development of historical investigation and the problem of historical method as exemplified in ancient and medieval texts and writers. Lectures, readings, and reports.

Hist. 47 Modern Intellectual History 3-3

Critical appraisal of the major contemporary historical traditions. Trends of thought and patterns of attitudes in the modern world. Evolution of leading concepts in modern Western tradition. Readings, reports, and lectures.

Hist. 48 The Ancient Near East 3-3

Introduction to ancient civilizations. Intensive study of Egyptian, Mesopotamian, Hebrew, Cretan, and Persian civilizations. Special emphasis is placed on social, economic, and intellectual development in ancient Near Eastern civilization.

Hist. 49 The Modern Near East 3-3

A diplomatic history of the Near East from the ascendancy of the Ottoman Turks to the establishment of mandatory regimes following World War I. The policies and rivalries of the great powers in relation to the Near East.

Hist. 44 Greek and Roman History 3-3

General summary of Greek and Roman civilizations from the arrival of the Hellenes to Alexander's Empire, the Roman Republic to the death of Caesar, Imperial Rome until the end of the Western Empire, the age of the Eastern Emperors.

Hist. 90 Independent Study in History 3-3

Open to students specializing in history. Each student selects a topic of particular interest, does research, and writes a scholarly report. Topic selection, study progress, and report writing are under tutorial guidance through weekly conference periods and reports.

Hist. 88 Methods and Material of History Teaching 3-3

Special techniques for the teaching of history, and their relationship to the principles of general methods. Current types of curriculum organization in history. Principal journals and authors in the field. Resources in material for unit teaching. Textbook selection. Guided observation.

INDUSTRIAL ARTS**I.A. 10 General Shop I****2-4**

An introductory experience in methods and procedures of conducting teaching units in a multiple-activity shop. Students sample at their level, units normally carried on in teacher-training assignments. Basic skills and techniques are applied. Originality and initiative are encouraged.

I.A. 11 Bench Woodworking**2-4**

This course emphasizes the individual project method in benchwork and a limited amount of machine work. Technical knowledge about tools, materials, processes, and design are stressed. Experiences are centered around the making of household accessories and recreation.

I.A. 12 Orientation to Metals**2-4**

This course features the chemical metallurgy of selected metals, the use of precision measuring tools, sheetmetal fabrication, and foundry practices. Opportunity is provided for practice in certain bench processes pertinent to the area of instruction.

I.A. 13 Introduction to Typography**2-4**

Understanding of the broad graphic arts industry and methods of visual communication. Comparison of the "big three" printing methods, materials, and hardware; screen printing, photography, and office reprography. Design, type speaks, terminology, point system, papermaking, inks, presses, proof marking, and movable type.

I.A. 14 D.C. - Circuit Fundamentals**2-4**

This course deals with fundamental principles of direct current electricity and magnetism plus applications of these principles to circuits and devices. Verification of these principles is made by means of experiments, demonstrations, and wiring problems.

I.A. 15 History of Mechanics**2-4**

History of Mechanics is the study of man's endeavor to harness the materials of nature to meet his ever-increasing demand for mechanics and power. Students construct a model which is representative of eras of man's accomplishments.

I.A. 16 Technical Drawing I**2-4**

The fundamentals common to industrial drawing such as lettering, dimensioning, orthographic projection, symbols; sectioning, isometric and auxiliary views are studied and developed. Problem development and blueprint reading are related to classwork.

I.A. 17 Crafts I**2-4**

An introduction, and exploration of the major craft areas. The tools, materials, and processes related to leatherwork, ceramics, art metal, jewelry, and enameling are studied. Projects are individually designed and executed in each area.

I.A. 21 Furniture Making**3-6**

This is a course in furniture woods, design, construction, and finishing. Hand-tool skill is furthered, along with machine techniques. Individual pieces of small furniture are designed, constructed and finished.

I.A. 22 Machine Shop Processes**3-6**

Instruction and practice in the use of metalworking machine tools and processes, as well as in arc welding, with the opportunity for design and fabrication of products which involve skill in machining and welding.

I.A. 23 Graphic Arts Unit Teaching**3-6**

Problem-centered group activity leading to development of a graphic arts unit. Investigation of materials, processes, hardware, occupations, historical development, and relationship of unit to industry. Emphasis on hand processes, creative hobbies, photography, printmaking and collecting, and supporting visual aids.

I.A. 24 Alternating Current Fundamentals**3-6**

Provides for further application of DC circuit principles covered in D.C. - Circuit Fundamentals together with the study of AC circuit fundamentals, electromagnetism and electromagnetic induction. Supplemented by experiments and tests performed with motors, generators, transformers, controls, and various types of drives.

I.A. 25 Internal Combustion Engines**3-6**

The study of internal combustion engine and the component parts that make up an automobile. Emphasis is on the breaking down, re-assembly, testing, and adjusting of a popular-make engine.

I.A. 26 Technical Drawing II**3-6**

Continuation of fundamentals in the field of intersection and developments, revolutions, axonometrics, assembly, and detail drawing. Emphasis is also given to chalkboard techniques.

I.A. 30 Architectural & Wood Structures**3-6**

Includes basic principles and assumptions of structural design, including making drawings and models. An analysis is made of ordinary structural members, frames, and trusses. Load tests are made determining reactions, shears, bending moments, and stresses.

I.A. 70 Foundation of Industrial Arts I**2-4**

A comparative study of the educational theories, the social and academic setting, and the leaders of each period of Industrial Arts history from manual training to the present, with emphasis on the major contemporary viewpoints of industrial arts.

I.A. 80 Principles and Practices in Industrial Arts**4-4**

Principles underlying methods of planning and guiding learning activities with a special emphasis on problem solving, the project method and unitary teaching, plus the effective application of these methods to industrial arts teaching, are examined.

I.A. 81 Foundations of Industrial Arts II 2-2

An overview of the social and philosophical foundations of American public education is undertaken with emphasis on curriculum theories and their application to the structure and organization of Industrial Arts in general education.

I.A. 85 Student Teaching in Industrial Arts 8-16

Each student is directly responsible for planning, teaching, and managing a given number of classes either in the campus junior high school or selected public school shops under the supervision of an experienced teacher. Weekly conferences are held for counsel and guidance.

I.A. 89 Instructional Material in Elementary Education 2-4

Students are given experiences in rudiments of planning, drawing, and construction of a variety of visual aids appropriate to the elementary grades. Emphasis is given to selected techniques of fabricating materials common to unit activities in the elementary school.

I.A. 88 Industrial Arts for Special Education 3-6

Students are given experiences in rudiments of planning, drawing, construction, and use of a variety of visual materials. A laboratory approach is made through projects to attain background in tools, materials, and processes appropriate to this type of teaching.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

All students majoring in industrial arts are required to take three elective shops and may take five. These can be used to increase versatility for general shop preparation or to give the student depth in one or two areas of specialization.

I.A. 31 Production Furniture 3-6

This course features experiences in the production of high-grade furniture, employing jigs, fixtures, and suitable mass production procedures. Appropriate methods of production management are used and studied. Students participate in the planning and management of procedures and devices.

I.A. 41 Woodworking Technology 3-6

This course is intended for students who have proved their ability and wish to specialize in Woodworking. It consists of tool and machine maintenance, designing and making teaching aids, and experimentation in wood technology and project development.

I.A. 32 Elements of Metallurgy 3-6

Instruction and laboratory experimentation in the physical metallurgy of common metals is featured in this course. Areas of study include crystallization, theories of slip, heat treatments, corrosion, and specimen preparation for microscopic inspection. The interpretation and use of the iron-carbon equilibrium diagram is required.
Prerequisites: I.A. 12, I.A. 22, or equivalent, and consent of instructor.

I.A. 42 Research in Industrial Materials**3-4**

An investigation of industrial materials and their behavior under varying conditions encountered in service. Standard tests and procedures are studied and laboratory tests applied to determine the properties of materials under investigation. Reports of research studies and laboratory experimentation are required.

I.A. 33 Offset - Lithography**3-6**

Publishing experience solving lithographic problems of design, pasteups, camera, stripping, platemaking, and operation of Davidson press. Planning dummy, choice of stock, composition, reprints, scheduling, binding. Principles of halftones, color, theory, photo-sensitive films and plates; chemistry of inks, papermaking and litho-printing.

I.A. 43 Problems of Service Printing**3-6**

Supporting role of the graphic arts: to job shops, in-plant reprography, packaging, advertising, high-school service printing. Illustrating art, techniques of color separation and printing; audio-visual presentation; application of electrostatic printing to computers, long distance facsimile; and office copiers.

I.A. 34 Radio Theory and Practice**3-6**

Basic electronic principles and their applications in electronic devices. The study of theory is supplemented by the construction and testing of various circuits which illustrate applications of basic principles.

I.A. 44 Transistors, F.M., Test Equipment**3-6**

Study and laboratory work deal with further applications of electronic principles introduced in Electronics II as they apply to power supplies, test equipment, photo-electric and other devices, plus an introduction to transistor theory and practice and FM receivers.

I.A. 35 Project Development in Mechanics**3-6**

A development course for those students whose interests lie in the field of Mechanics. Largely devoted to the planning, research, and construction of a project which has been approved by the instructor.

I.A. 45 Mechanics and Mechanisms**3-6**

A study of motions and mechanical elements that comprise the basic mechanisms of machinery. Practical applications are made in selected areas of cam design, pulley drives, gear trains, machine linkages, and other pertinent mechanisms.

I.A. 36 Descriptive Geometry**3-6**

In this phase of drawing, problems both abstract and practical are worked out graphically, based on sound facts, taught by logical reasoning. Visualization problems dealing with the concept of locus are also employed.

I.A. 37 Advanced Design 3-6

The aim of this course is to afford professional experiences in the field of design as applied to modern contemporary production methods. Field trips to local plants to observe design methods. Students develop individual design projects and follow through to a completed design module. **Prerequisite: Art 17 or equivalent course.**

I.A. 47 Ceramics 3-6

This course deals with ceramic problems. Various methods of clay formation are studied including throwing on the wheel. Students are asked to explore ceramic decorations and designs as related to contemporary architecture and sculpture.

I.A. 90 Experimentation in Industrial Arts 3-6

For exceptional students outstanding in design and craftsmanship, upon approval of both department head and instructor. Largely devoted to developing an original design, carrying on the necessary research, and completing a project.

LIBRARY SCIENCE

Students in the elementary curriculum wishing to qualify for certification as a school librarian must take the following courses plus Eng. 39 or Eng. 40 for a total of 18 semester hours of work. In addition they will serve an internship in the college and training school libraries, putting into practice theories and techniques learned in course work.

L.S. 80 Organization and Administration 3-3

Organization and administration of the school library, its background, activities, functions, personnel, material and equipment.

L.S. 81 A & B Reference Materials and Their Use 6-6

Selection and use of basic reference works such as encyclopedias, dictionaries, periodical indexes, biographical dictionaries, atlases, yearbooks, directories, handbooks and general bibliographies.

L.S. A & B Cataloguing and Classification of Materials 6-6

Accepted procedures for classification and cataloguing of school library materials, both book and non-book recordings, films, filmstrips, slides, maps, pictures and pamphlets.

MATHEMATICS**Math. 01 Remedial Mathematics 1-0**

Students are assigned to this section on the basis of demonstrated need for remedial work.

Math. 10A & 10B College Mathematics I & II 6-6

Using the language and ideas of set theory, a study of the patterns in mathematics underlying arithmetic and Euclidean Geometry. The number system and its sub-systems and some informal geometry.

Required course for those students preparing to teach in the elementary school.

Math. 13A & 13B College Mathematics I & II**6-6**

Topics include: the nature of mathematical systems, the real number system, algebra, trigonometry, analytic geometry and calculus. Required course for students preparing to teach History, English and Industrial Arts in the secondary school and those in the BA programs. Mathematics 13A required for students in the Special Education program and those in the nursing program.

Math. 11 Algebra I**3-3**

Modern college algebra. The algebra of mathematical logic, sets, relations, functions, operations, structure of the number system, mathematical induction, rational and real roots of polynomial functions, linear equations, matrices, and determinates.

Math. 12 Trigonometry**3-3**

The analytical aspects of trigonometry are emphasized in this course. Complex numbers, the trigonometric ratios, trigonometric identities and equations, trigonometric functions, and the solution of triangles. **Prerequisite: Math 11 or by special permission of instructor.** Math. 11 & 12 required beginning math. course for all math-science majors. May be elected by others.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Candidates for secondary teaching certificates in mathematics must complete a minimum of 33 semester hours of credit in the field, the equivalent of Math. 30 through Math. 38. With special permission of the mathematics faculty students may substitute two other courses in mathematics or physics or may substitute 6 semester hours of independent study for any two of the courses listed below.

Students in the elementary curriculum who wish to specialize in mathematics can do so by electing four courses beyond required Math. 10A & B from the courses listed below under the guidance of the mathematics department. Other interested students may choose electives from this area with department approval.

Math. 30 Analytic Geometry**3-3**

Coordinate systems, graphs of relations, algebraic descriptions of loci, and elementary transformations. **Prerequisite: Math. 12 or by special permission of the instructor.**

Math. 31 Calculus I**3-3**

The derivative and the definite integral are defined. Applications are made to functions in one variable. **Prerequisite: Math. 20 or the equivalent.**

Math. 32 Calculus II**3-3**

Continuation of Math. 31. Techniques of integration, improper integrals, and infinite series are studied. **Prerequisite: Math. 21 or the equivalent.**

Math. 33 Calculus III**3-3**

Functions of more than one variable. **Prerequisite: Math. 32 or the equivalent.**

Math 34 Introduction to Modern College Geometry 3-3

Selected topics from Euclidean geometry including Menelaus' Theorem, Desargues' Theorem, harmonic elements and cross ratio, and an introduction to synthetic projective geometry and analytic projective geometry. **Prerequisite:** Math. 31 or by special permission of the instructor.

Math 35 Probability and Statistics 3-3

Sophisticated counting, probability theory, random variables and their probability function, the binomial and normal models, and the theory of sampling are topics included in this course. **Prerequisite:** Math. 32 or by special permission of the instructor.

Math. 36 Modern College Geometry 3-3

A continuation of Math. 34. Topics from analytic geometry, metric projective geometry and non-Euclidean geometries. **Prerequisite:** Math. 34.

Math. 37 Elementary Differential Equations

Topics include: differential equations of the first order, linear differential equations, applications. **Prerequisite:** Math. 33.

Math. 38 Introduction to Abstract Algebra 3-3

Topics covered include: equivalence relations, congruences, binary Boolean algebra, integral domains, fields and groups. **Prerequisite:** Math. 31 or the equivalent.

Math. 40 Problem Solving 3-3

The search for common patterns in problems, methods of solution, and the process of specialization and generalization in problem solving. **Prerequisite:** Math. 13A or Math. 10A.

Math. 41 Abstract Algebra 3-3

Matrices, linear systems, determinants, fields, rings and ideals. **Prerequisite:** Math. 11.

Math. 42 History of Elementary Mathematics 3-3

A history and related-problem-solving course using selected topics from the mathematics developed by the Babylonians up through European mathematics of the eighteenth century. **Prerequisite:** Math. 13A or Math. 10A.

Math. 43 Introduction to Mathematical Logic 3-3

A course in postulational foundations and the processes of logical reasoning with applications of mathematics to science and other fields of thought. **Prerequisite:** Math. 13A or Math. 10A.

Math. 44 Linear Algebra

The theory of finite dimensional vector spaces is examined and applied in a variety of situations. Linear functionals and linear transformations are studied and applied to the theory of determinants and matrices. **Prerequisite:** Math. 30 and Math. 11.

Math. 88 The Secondary School Mathematics Curriculum 3-3

The objectives and content of a modern mathematics sequence for grades 7-12 are studied by examining in detail the materials developed by SMSG (School Mathematics Study Group). Representative materials developed by other leading groups will be compared with the SMSG program.

MEDICAL TECHNOLOGY**M.T. 80 Hematology, Serology and Blood Bank 8-19**

Theory and practice of enumeration of blood cells, and evaluation of stained blood smears; precipitation, agglutination, and complement fixation tests; determination of human blood groups; procurement and preservation of human blood for transfusion.

M.T. 81 Bacteriology and Parasitology 8-13

A systematic study of pathogenic bacteria and fungi, with emphasis on methods of identification.

M.T. 82 Histology and Cytology 4-7

Individualized instruction in the preparation and staining of tissues and body fluids for microscopic study.

M.T. 83 Biochemistry 8-13

The chemical composition of body fluids and the significance of its variation in disease, with emphasis on instrumentation and the development of analytical skills.

M.T. 84 Laboratory Analysis 4-8

Supervised practice in the clinical laboratory of Burbank Hospital.

MUSIC**Mus. 11 Art of Music I 3-3**

Music as aesthetic experience will be stressed. Representative styles from the Middle Ages to the present will be included, as well as major categories such as symphony, oratorio, opera and chamber music.

Mus. 10A Art of Music IA 2-4

The aim is to make the student acquainted with representative music from the Middle Ages to the present, as well as to further those musical skills which will be helpful to the elementary or special class teacher.

Mus. 10B Art of Music IB 1-2

Attention to major categories such as symphony, oratorio, opera and chamber music. Conceived both as a continuation of Mus. 10A and a preparation for Mus. 80 or Mus. 81.

Mus. 80 Music in Elementary Education 2-4

The objectives and techniques of music in the first six grades are examined. The student is led to think of music in terms of the abilities and needs of the elementary school child. Includes observation. **Prerequisites:** Mus. 10 A & B.

Mus. 81 Music in Special Education 2-4

The objectives and techniques of teaching music in special classes are examined. The student is led to think of music in terms of the abilities and needs of the mentally retarded child. **Prerequisites:** Mus. 10 A & B.

ELECTIVES**Mus. 30 Art of Music II 3-3**

The emphasis will be upon music's reflection in artistic terms of the values and ideals of societies past and present. Inter-relationships between the fine arts will be examined. May not stand for Mus. 11.

Mus. 31 Symphony 3-3

Structural and stylistic characteristics of the symphony from the 18th Century to the present time are studied.

Mus. 32 Opera 3-3

Several works from the standard operatic repertoire are introduced. In addition, the student becomes familiar with some of the significant trends in modern opera.

Mus. 33 Chamber Music 3-3

The vast area of music for smaller combinations of instruments is surveyed, with some emphasis upon the literature for the string quartet.

Mus. 34 Twentieth Century Music 3-3

The idioms and aesthetic notions of the present century are examined, together with their relationships to the past.

Mus. 40 Choral Arts 1-2

Singing works from the great corpus of choral music past and present, including dramatic music. Open to the entire student body on audition. No more than six semester hours may be applied toward graduation. May be taken for audit.

Mus. 41 Instrumental Arts 1-2

Small and large ensemble playing of representative works for brass, percussion, woodwind and string instruments. Open to the entire student body on audition. No more than six semester hours of Mus. 41 or any combination of Mus. 41 and Mus. 40 applied toward graduation. Available for audit.

Music in Elementary School Teaching Specialty

This curriculum is designed to give the elementary classroom teacher a special competence in music, with a view particularly to making a teacher capable of introducing music into collaborative teaching techniques. Students will be admitted at the discretion of the music faculty. Conditions for admittance: Keyboard competence of the level of the Bach "Two-Part Inventions" and ability to sing on pitch with a pleasant tone and accurate rhythm. Required courses: Mus. 10A, Mus. 10B, Mus. 30 and any elective selected from Mus. 31, 32, 33 and 34 and all of the courses which follow:

Mus. 42 Class Piano 1-2

Practical keyboard usages in classroom work; accompaniment, simple transposition, harmonization of melodies at the keyboard.

Mus. 43 Class Voice**1-2**

Principles of voice production. Breath control, phrasing, resonance, diction.

Mus. 44 Song**3-3**

Popular, folk, and art songs of many nations are surveyed, with some consideration to the application of such music to the elementary classroom.

Mus. 45 Harmony**3-3**

The aim is to secure for the student sufficient mastery of four-part harmony to enable him to write harmonizations of simple melodies, as well as to grant him a deeper insight into principles of modulation and key relationship.

Mus. 82 Workshop in Elementary Music Education**2-4**

Modern approaches to professional music education in the elementary school. Observation and individual projects. **Prerequisites:**

Mus. 10 A & B, 42, 43 and 44.

Candidates must take Mus. 40 and/or Mus. 41 for at least six semesters (at least three semesters for credit). Private or piano study beyond the work listed above will be encouraged.

NURSING

A final mark of 2 shall be required for each of the nursing courses. Nurs. 71A Foundations of Nursing I is prerequisite to Nurs. 71B Foundations of Nursing II and both are prerequisite to any clinical nursing course in the third year of the curriculum.

Nurs. 80 Medical-Surgical Nursing for children is prerequisite to Nurs. 85 Public Health Nursing.

A student with an unsatisfactory mark in any of the prerequisite courses will be obliged to withdraw from the program until such time as the course is offered again, which might be an entire year in the case of the course in Foundation of Nursing.

Nurs. 70 Introduction to Nursing**2-2**

Historical and socio-cultural factors which have influenced the development of nursing as a profession. The professional responsibilities and privileges of the nurse in the United States today are analyzed.

Nurs. 71A Foundations of Nursing I**4-7**

The broad concepts of patient-care. The student learns basic nursing skills, which may be applied to all nursing situations. Emphasis is placed on health teaching of the patient and his family.

Nurs. 71B Foundations of Nursing II**4-7**

This is a continuation of Nurs. 71A, which is a prerequisite. Planned clinical experience is provided.

Nurs. 72 Nutrition**2-2**

Includes the study of the basic elements of the science of nutrition. Food requirements are related to individual need. Budgeting, food purchasing, menu planning, selection, preparation and serving of basic foods are considered.

Nurs. 80 Medical-Surgical Nursing**12-24**

The student learns to identify, analyze, and help solve nursing care problems based on the needs of patients as individuals. The common medical-surgical conditions are considered. Included are dietary treatment and pharmacology. Experience in the clinical field is provided concurrently.

Nurs. 81 Maternity Nursing**6-24**

This course emphasizes the maternity cycle as a family affair. The role of community services and agencies in providing maternal and infant health supervision. Clinical experience is concurrent.

Nurs. 82 Nursing of Children**6-24**

Basic knowledge of the growth and development of the normal child is utilized in relation to the nursing care of the sick child. Clinical experience is provided in specialized areas including both the hospital and the community.

Nurs. 83 Psychiatric Nursing**6-24**

The student is guided toward an understanding of fundamental human behavior both in mental health and mental illness with emphasis on principles applicable to other life situations. Clinical nursing is provided.

Nurs. 84 Public Health Science**3-3**

The principles and practice of public health on local, state, national, and international levels. These include the areas of epidemiology, statistics, maternal and child health, health education, communicable disease, laboratory service, and environmental sanitation.

Nurs. 85 Public Health Nursing**6-24**

The role of the public health nurse is viewed in relation to the promotion and maintenance of health prevention of disease and disability, and comprehensive care of the sick.

Nurs. 86 Advanced Medical-Surgical Nursing**6-24**

Provides the student with an opportunity to broaden the skills learned in Nurs. 210. Increases knowledge of patient teaching and rehabilitation measures as integral parts of comprehensive nursing care of patients.

Nurs. 87 Disaster Nursing**2-2**

Presents the basic principles of first aid and emergency care, an understanding of the effects of a major disaster civilian or military, and the nurse's role in the management of a large group of injured persons.

Nurs. 88 Principles of Management**2-2**

The basic elements and principles of management are studied, with consideration of their application to the practice of nursing and to beginning leadership positions in nursing.

Nurs. 89 Nursing Seminar**2-2**

A survey of the current trends and problems confronting nursing as a profession. The role of the nurse as both an individual and a participant in organizations and groups concerned with these problems is considered.

PHILOSOPHY**Phil. 10 Introduction to Philosophy****3-3**

The broad problems of truth, reality, goodness and beauty through a study of the primary courses of an historical nature and the contributions of major schools of philosophy such as realism, empiricism, and idealism.

Phil. 80 Educational Philosophy**3-3**

A guide to the philosophical treatment of educational problems. Seeks solutions to educational problems by employing the synoptic, critical, and systematic areas of philosophy.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Students in the liberal arts curriculum who elect a minor in philosophy will select their courses from among the following. Other students with free elective may also select courses from this list.

Phil. 30 Logic**3-3**

Precise and logical habits of thinking. Both the theoretical and practical aspects of logic, beginning with Aristotelian logic and culminating in an introduction to the principles of symbolic logic.

Phil. 36 The Philosophy of Plato**3-3**

Plato's theory of ideas, theory of knowledge, ethical and political views, doctrine of fine arts. Reading in Plato's dialogues.

Phil. 32 History of Modern Philosophy**3-3**

Emphasizes the more important and representative trends of modern thought since the Renaissance, including Descartes, Locke, Spinoza, Leibnitz, Hume, Kant, and Hegel.

Phil. 33 The Philosophy of Communism**3-3**

An historical and critical study of Communism, its origins, philosophy, and development as found in the writing of Karl Marx.

Phil. 34 Contemporary Philosophy**3-3**

An analytical and historical study of the Analysts emanating from the Vienna Circle study and of the key element of Phenomenology, Existentialism, and Marxism.

Phil. 35 Philosophy of Religion**3-3**

The problem of evil; the roles of intuition, faith, and reason in religion; the relationship between morality and religion. Reading and discussion of The Book of Job and of texts by St. Thomas, Kierkegaard, Nietzsche, Tennant, and Bergson.



Phil. 36 Philosophy In The Twentieth Century 3-8

Tendencies and representative figures of American and European thought since 1900. Philosophies studied include idealism, pragmatism, positivism, the new realisms including analytic and linguistic philosophy.

Phil 37 Existentialism 3-3

The origin of contemporary existentialism; its leading ideas of Kierkegaard, Heidegger, Sartre, Jaspers, and Marcel.

PHYSICAL EDUCATION

Students in all curricula are required to successfully complete four units of physical education. A special class of restricted physical education geared to the abilities and limitations of the group is provided for individuals with physical handicaps.

P.E. 20B First Aid

The official Red Cross Standard course is required for students in all curricula except Nursing.

P.E. 80 Physical Education in the Elementary School 1-2

This theory and practice course is designed to guide the classroom teacher in organizing a comprehensive program of physical education activities based upon physiological, sociological, and psychological needs of elementary children with practice teaching of stunts, tumblings, and rhythmic.

Women

P.E. 10A Physical Education I

Opportunity is given for the individual to participate in a variety of healthful activities for the achievement of general physical development and particular fundamental skills. Introductory study is made of basic rules of hygiene from contemporary medical knowledge.

P.E. 10B Physical Education II

This continuation of the basic course includes activities such as tennis, archery, badminton, basketball, and folk dancing. Emphasis is placed on the acquisition of a general knowledge of team games as well as the development of individual skills and the elements of fair play.

P.E. 20A Physical Education III

Additional opportunity is offered to acquire advanced skills in folk dancing, individual sports, basic apparatus technique, stunts, and self-testing events. Provision is also made for the pursuit of chosen athletic interests.

P.E. 20B Physical Education IV

Physical Education activities are elected on the basis of both individual and group interest. By the end of the fourth semester, each student must demonstrate the ability to swim 120 feet.

Men

P.E. 10A Physical Education I

Opportunity is provided for the individual or group to engage

in a variety of healthful activities and thereby acquire the fundamental skills essential for intramural and recreational programs such as basketball, soccer, softball, tennis, and touch football.

P.E. 10B Physical Education II

This physical fitness program is designed to meet individual needs and prescribe remedial activities to improve and maintain physical tone.

P.E. 20A Physical Education III

General physical development is maintained through individual skills that have recreational value, such as badminton, fencing, handball, and horseshoes.

P.E. 20B Physical Education IV

This continuation of Physical Education 20A provides additional opportunity for the regular pursuit of chosen athletic interests.

ELECTIVES

It is recommended that students who are interested in future course work in physical education take Biology, Anatomy and Physiology.

P.E. 81 Physical Education for Secondary Schools 3-3

Pertinent background material for organizing and conducting an integrated activity program for junior and senior high school boys.

PHYSICS

Phys. 20 General Physics 3-4

Emphasis in this course will be on application of physical principles. Topics studied will include force and motion, work and energy, fluids, and other topics in mechanics. Required of all Industrial Arts students.

Phys. 10 Physics 3-4

With lectures, demonstrations and labs the topics studied will include electricity, light, heat, X-ray, the atom and nucleus, and radioactivity. Required of freshmen in the Nursing Curriculum.

ELECTIVES AND SPECIAL FIELD REQUIREMENTS

Candidates for secondary teaching certificates in Physics must select courses from those listed below to complete 24 semester hours credit in Physics. The faculty in charge of counseling students in the field may prescribe additional courses in the field. Students in other curricula also may elect, under guidance, the following courses:

Phys. 30A & 30B General Physics I & II 3-4

The study of mechanics, heat, wave motion, light, and electricity. Course consists of lectures, demonstrations, and experiments in each of the areas.

Phys. 31 Modern Physics 3-4

Topics include: Special relativity, the Bohratom, radioactivity,

quantum theory of radiation, and X-ray. Selected experiments are performed. **Prerequisite:** Phys. 30A and 30B.

Phys. 32 Electronic Physics I 3-4

Statics and time varying electric and magnetic fields. Applications of Kirchoff's law, A.C. circuit theory. **Prerequisite:** Physics 30A & 30B.

Phys. 33 Electronic Physics II 3-4

The vacuum tube, transistors, electronic circuits, introduction to operational amplifiers. **Prerequisite:** Phys. 32.

Phys. 34 PSSC Physics 3-4

For prospective secondary physics teachers. A study of the concepts, demonstrations, and experiments contained in the secondary physics course prepared by the Physics Science Study Committee. **Prerequisite:** Phys. 30 A & 30 B.

Phys. 35 Mathematical Physics 3-3

Development of mathematical methods and applications in selected physical topics. Topics include classical mechanics, relativity, quantum mechanics, and statistical mechanics. **Prerequisite:** Upper class standing in Physics, Chem. or Math.

Phys. 36 Optics 3-4

An introductory course in geometrical and physical optics including reflection, refraction, lens theory, interference, diffraction, and line spectra. Laboratory experiments will be an integral part of the course. **Prerequisites:** Phys. 30 & 30B and Math. 21.

Phys. 40 Intermediate Mechanics 3-3

Harmonic oscillators, kinematics in three dimensions, the Kepler problem, elliptic and hyperbolic orbits, systems of particles, and the body problem. **Prerequisite:** Math. 37 and permission of instructor.

Phys. 41 Computer Fundamentals 3-3

Digital and analog computers are considered as tools for solving physical problems. A basic analog computer is available for class use. Programming methods are developed for digital computer. **Prerequisites:** Upper class standing and permission of instructor.

Phys. 90 Advanced Laboratory Credits to be arranged

An applied research problem is selected by the student with departmental consent. The problem is investigated and the results embodied in a comprehensive report. **Prerequisite:** Upper class standing and permission of instructor.

PSYCHOLOGY

Psych. 10 General Psychology 3-3

The study of the science of human behavior deals with the scientific method, maturation, motivation, emotions, sensation, perception, learning, personality and adjustment.

Psych. 20 Adolescent Psychology 3-3

The significance of psychological factors in the adjustment of the adolescent to his peers, family, school, and society. **Prerequisite:** Psych. 10.

Psych. 21 Child Psychology 3-3

The interaction of the maturational stages with environmental influences from conception to puberty. **Prerequisite:** Psych. 10.

Psych. 22 Human Growth and Development 3-3

This course covers the life span of man with reference to physiological, social and psychological processes. **Prerequisite:** Psych. 10.

Psych. 23 Developmental Psychology 3-3

This is a foundation course showing the development of the child from infancy to maturity. The interrelation of learning patterns, physical growth patterns, emotional, intellectual, and social development are stressed. **Prerequisite:** Psych. 10.

Psych. 24 Psychology of Exceptional Children 4-4

The etiology, classification, and problems of children who have physical disability, mental retardation, giftedness, and emotional or social difficulties. Clinical observations will be made and consultants will be available to provide a better understanding of all phases of the exceptional child.

Psych. 80 Educational Measurements I 3-3

Basic statistical concepts and techniques used in appraising pupil achievement, aptitude, and personality. Practical application of teacher-made tests, standardized tests, and other evaluative instruments. **Prerequisite:** Psych. 10.

Psych. 81 Educational Measurements II 3-3

A laboratory course in educational testing, with practice in administration, scoring and analysis. **Prerequisites:** Psych. 10 and Psych. 80.

ELECTIVES**Psych. 30 Mental Hygiene 3-3**

This course considers the factors governing the adjustment of the individual to his environment, particularly in relation to mental, physical, emotional and social development. **Prerequisite:** Psych. 10.

Psych. 31 Psychology of Interpersonal Relations 3-3

Psychological constructs and concepts in their application to various aspects of the interaction of human beings with each other. **Prerequisite:** Psych. 10.

Psych. 82 Measurement of Intelligence 3-3

The nature of intelligence is studied by means of research and the use of both individual and group instruments. **Prerequisites:** Psych. 10 and Psych. 80.

Psych. 70 Psychology of Learning 3-3

The nature and fundamental principles of learning form the basis of this course. Procedures and conditions which make for effective learning are studied. **Prerequisites:** Psych. 10.

Psych. 35 Psychology of Personality 3-3

A study of the wide variety of dynamic factors in personality formation will be followed through approximate sequence of the life periods with consideration of major theories and assessment. **Prerequisite: Psych. 10.**

Psych. 32 Psychology of Exceptional Children 3-3

Designed for prospective classroom teachers, this course provides an overview of the nature and needs of exceptional children including the gifted, the mentally retarded, the speech handicapped, the emotionally disturbed, the socially maladjusted, and the physically handicapped.

SCIENCE

(Also see Biology, Chemistry & Physics)

Sc. 20A & 20B Physical Science I and II 3-4

A survey of the broad areas of the physical sciences: the solar system, motion, energy, electricity, structure of matter, atomic structure, chemical combination and atomic energy. Employs the historical and logical development of scientific concepts and thought.

Sc. 31 Science in Elementary Education 2-4

Topics for study will be selected from those science areas particularly applicable in elementary education. Both physical and biological science problems are studied. Emphasis is on experimentation, observation, and problem solving.

Sc. 88 Science Methods for Secondary Teaching

Aims and objectives of science teaching are examined and patterns of curriculum development are investigated. Emphasis is placed upon the relative merits of the demonstration, the experiment projects, field trips and problems that students encounter in their practice teaching.

Sc. 30 Geology 3-4

This is a survey course in physical and historical geology. Special attention is given to the evidence of recent glaciation in New England. Laboratory work includes field trips, study of rocks, minerals, and fossils.

Sc. 31 Astronomy 3-4

Motions of the earth, moon and planets including measures of time and place. Properties of reflecting and refracting telescopes. Some of the properties of stars. A 62 mm refractor telescope and a 6 inch reflector telescope are available. Some evening labs. are required.

ELECTIVE AND SPECIAL FIELD REQUIREMENTS

Students majoring in elementary education with a specialization in science must complete a minimum of 15 S.H. of science beyond the required Bio. 10 and 10B and Sc. 20A including Physical Science II, a course in field science (either Bio. 33 Conservation or Bio. 34 Field Natural History) and one earth science (Sc. 30 Geology, Geog. 32 Climatology, Geog. 31 Meteorology, Geog. 39 Geomorphology).

SOCIAL SCIENCES

(Also see History & Geography)

S.S. 21 Social Institutions 3-3

Introduction to the formal study of social relations. It includes the study of social institutions and culture patterns, in terms of principles of sociology, economics, social psychology and cultural anthropology.

S.S. 22 Introductory Economics 3-3

The organization and functions of economic society, and the interrelated processes of production, distribution and consumption. Topics include corporate organization, national income, price theory, money, credit, banking, public finance, taxation, and politico-economic philosophies. Current problems are emphasized.

ELECTIVES**S.S. 30 Comparative Government 3-3**

A comparative analysis of the various forms of government, their underlying philosophies and their differing political climates. The American system receives special emphasis.

S.S. 31 Introduction to Political Science 3-3

The basic principles of political science through survey and analysis of political ideas, institutions, practices and parties. Special emphasis upon Great Britain, France, and the Soviet Union. Introduces classics and contemporary writings in the field.

S.S. 32 Introductory Anthropology 3-3

A brief survey of the types, range and diversity in human cultures and cultural institutions, past and present. Cultural evolution. Culture change and culture lag. The process of acculturation. The relationship of culture and personality.

SPECIAL EDUCATION**Sp. Ed. 20 Nature and Needs of the Mentally Retarded 4-4**

The characteristics of both educable and trainable children, methods of classification, and causes of mental retardation. The responsibility of the community and the school in providing for the needs of the mentally retarded.

Sp. Ed. 21 Home Arts 3-6

A study of foods and clothing. The areas of foods, selection and preparation, elementary nutrition, meal planning, and table service; clothing, quality, style and care; within the ability of the mentally retarded.

Sp. Ed. 82 Curriculum For The Mentally Retarded 3-3

The study of the curriculum structures for the mentally retarded. Emphasis will be given to the content as it relates to the development of learning, language arts, quantitative thinking, social and civic responsibilities and pre-vocational experiences.

Sp. Ed. 80 Methods of Teaching the Mentally Retarded 3-3

The organization and planning of activities and materials for mentally retarded children at different maturational levels. Study of current research related to the application of learning patterns.

Sp. Ed. 23 Guidance for the Mentally Retarded 3-3

Introductory course dealing with the principles of guidance, techniques of counseling, occupational information, and services for the retarded. The use of community resources for the classroom teacher.

Sp. Ed. 85 Student Teaching 12-25

Senior students have eighteen weeks of complete classroom responsibility, guided by cooperating teacher, college supervisor, and professional personnel from other disciplines, in teaching varied levels of retardation in public schools and institutions.

Laboratory Experiences

Students are encouraged, in addition to their student teaching, to have practicum experiences with trained personnel in scouting, camping, swimming, organized play, handicraft, religious instruction and sheltered workshop activities.

Students attend meetings of organized parent groups, local, state, and national professional associations, and participate through the Special Education Club, Inc. in the planning of regional conferences and workshops for teachers.

Individual relations are initiated for tutoring children with multiple handicaps, and volunteering services to mental health organizations, community recreation centers, religious groups and social service agencies.

Additional strength and depth for teaching mentally retarded will be provided by guided electives at the appropriate levels of interest and the above-described primary experiences.

ELECTIVES**Sp. Ed. 70 Methods of Teaching the Trainable Retarded 3-3**

The characteristics of the trainable mentally retarded with special reference to his needs and learning will be considered. Clinical experiences, current research practices, and an opportunity to use a variety of methods, techniques, and materials.

Sp. Ed. 71 Curriculum for the Trainable Child 3-3

Analyzes special problems of curriculum development for the trainable child and evaluates curriculum materials and resources. Emphasis on content appropriate to the areas of language arts, quantitative thinking, social and civic responsibility.

Sp. Ed. 72 Problems in Language Arts for Mentally Retarded 3-3

Students identify, develop, and use resources related to the classroom problems in language areas. The stages of development and deviations of the exceptional child. Current research, diagnosis, and remediation of practical language usage.

Sp. Ed. 73 Readings and Research in Mental Retardation 3-3

A variety of approaches to educational research and problems of significant value in mental retardation. Class participants demonstrate their ability to appraise and apply resources in the development of their research problem.

Sp. Ed. 74 Industrial Skills and Analysis of Job Areas 3-3

A laboratory course providing technical knowledge and instruction of industrial skills needed by the mentally retarded. Practical experience related to communal needs is considered in making job analysis and analyzing skills required in specific jobs and job areas.

SPEECH**Sp. 01 Speech Improvement 1-0**

Remedial course. Students are assigned to this program after diagnosis and recommendations of need for speech improvement. Provides individual and group therapy.

Sp. 10 Speech 2-3

In this course, the student is introduced to the effective organization and delivery of speeches, oral interpretation of literature, and the techniques of intelligent criticism. In group work, he participates in forums, panel discussions, and parliamentary procedure.

ELECTIVES**Sp. 80 Introduction to Speech Pathology 3-3**

Designed for the prospective classroom teacher. Introduction to diagnostic and therapeutic techniques with the more common types of speech disorders: articulation, voice delayed speech, stuttering, and speech disorders associated with mental retardation, hearing problems, cerebral palsy, and cleft palate.

Sp. 81 Practicum in Speech Therapy 3-3

Students are assigned to regular classes where they gain practice in diagnostic and therapeutic techniques with the more common types of speech disorders. **Prerequisite:** Introduction to Speech Pathology. 3-3

Note: Arabic numbers at end of course descriptions represent semester hours and clock hours in that order.

Examples**Art 10 Survey of Art Forms I 3-3**

The 3-3 represents 3 semester hours, 3 clock hours.

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